Vol. 893 Number 3

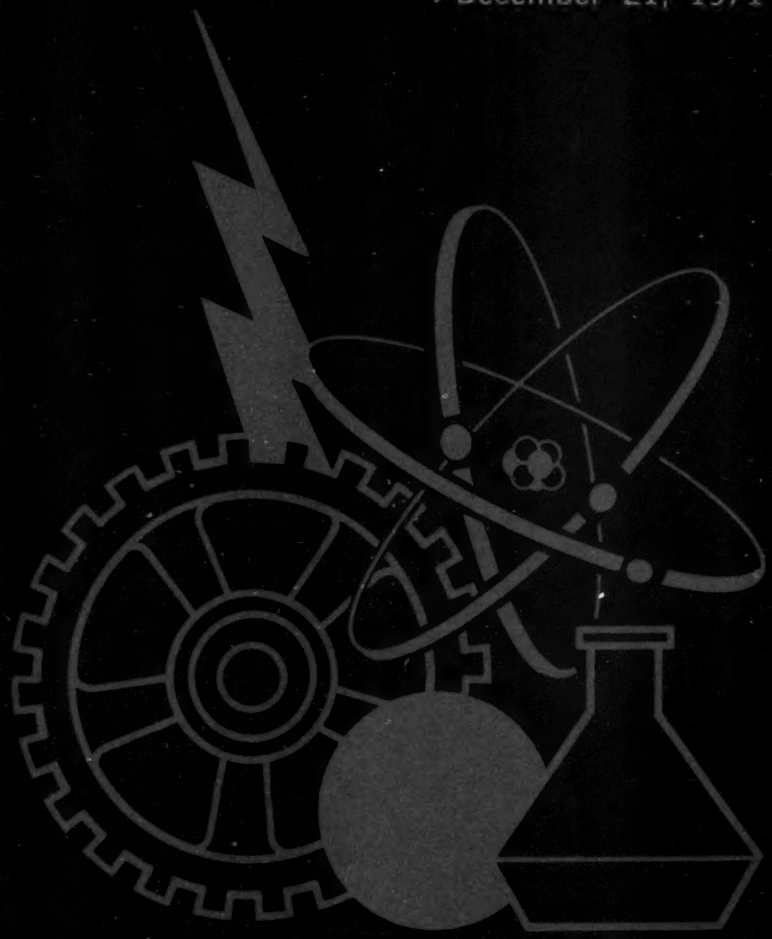
OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

December 21, 1971



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 21, 1971 Volume 893 Number 3

CONTENTS

	Page
Issue of December 21, 1971	805
Patent and Trademark Notices	
Title 37—Drawing Requirements	806
Availability of Annual Report on Government Patent Policy	807
Customer Relations Center	807
Patented Files Service	807
New Application Processing	807
Registration to Practice	808
Access to Patent Application and Interference Files	809
Status Inquiries	810
Public Records Certification Desk	810
Patent Suits	810
Patent Notices	
Certificates of Correction for the Week of December 21, 1971	812
Disclaimers	812
Dedications	812
Adverse Decisions in Interferences	812
Patents Available for Licensing or Sale	812
Condition of Patent Applications	814
Reissue Patents Granted	815
Patents Granted	
General and Mechanical	818
Chemical	998
Electrical	1097
Design Patents Granted	1198
Index of Patentees	PI 1
Indices of Reissues and Designs	PI 50
Classification of	
Patents (Including Reissues)	PI 51
Designs	PI 53
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 54
Designs	PI 56

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Drawing Requirements

These rule changes are intended to facilitate the handling and filing of patent application drawings in the Patent Office. Changing the drawing size to 8½ by 14 inches will permit filing of the original drawings in the application file wrapper in the Patent Office. The new size will also permit the use of standard storage equipment, mailing envelopes, and copying equipment.

The revised rules will prohibit the use of names within the "sight" of the drawing, thereby making additional space available for illustration and reducing the number of formal objections and corrections required.

Permanently mounted color photographs in plant patent applications will be accepted. This should result in substantial savings to applicant.

Since no names or other identification will be permitted within the "sight" of the drawing, applicants are expected to use the space above and between the hole locations to identify each sheet of drawings (note § 1.84(1)). This identification may consist of the attorney's name and docket number or the inventor's name and case number and may include the sheet number and the total number of sheets filed (for example, "sheet 2 of 4").

Notice of proposed rule making regarding revision of §§ 1.59, 1.84, 1.85, 1.123, and 1.165 and revocation of §§ 1.82 and 1.87 of Title 37, Code of Federal Regulations, relating to drawing requirements, was published in the Federal Register of January 15, 1971 (36 F.R. 610). Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

Effective date. This revision shall become effective on the date of its publication in the Federal Register. However, until Jan. 1, 1972, drawings complying with the unrevised rules will also be accepted.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 1.59 is revised to read as follows:

§ 1.59 *Papers of complete application not to be returned.*

Papers in a complete application, including the drawings, will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

§ 1.82 [*Revoked*]

2. Section 1.82 is revoked.

3. In § 1.84 the introductory text preceding paragraph (a) and paragraph (h) are revoked and paragraphs (a), (b), (c), (j), and (l) are revised to read as follows:

§ 1.84 *Standards for drawings.*

(a) *Paper and ink.* Drawings must be made upon pure white paper of a thickness corresponding to two-ply or three-ply bristol-board. The surface of the paper must be calendered and smooth and of a quality which will permit erasure and correction with India ink. India ink, or its equivalent in quality, must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(b) *Size of sheet and margins.* The size of a sheet on which a drawing is made must be exactly 8½ by 14 inches. One of the shorter sides of the sheet is regarded as its top. The drawing must include a top margin of 2 inches and bottom and side margins of one-quarter inch from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches. Margin boarder lines are not permitted. All work must be included within the "sight." The sheets may be provided with two ¼-inch-diameter holes having their centerlines spaced eleven-sixteenths inch below the top edge and 2¾ inches apart, said holes being equally spaced from the respective side edges.

(c) *Character of lines.* All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be absolutely black and permanent; the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid, and fine or crowded lines should be avoided. Solid black should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

* * * * *

(h) [*Revoked*]

* * * * *

(j) *Arrangement of views.* All views on the same sheet must stand in the same direction and should, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the two-inch margin is on the right-hand side. One figure must not be placed upon another or within the outline of another.

* * * * *

(l) *Extraneous matter.* An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin, except that identifying indicia (attorney's docket number, inventor's name, number of sheets, etc.) should be placed within three-fourths inch of the top edge and between the hole locations defined in paragraph (b) of this section. Authorized security markings may be placed on the drawings provided they be outside the illustrations and are removed when the material is declassified.

* * * * *

4. Section 1.85 is revised to read as follows:

§ 1.85 *Informal drawings.*

The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required. The necessary corrections or mounting will be made by the Office upon applicant's request or permission and at his expense. (See §§ 1.21 and 1.165.)

§ 1.87 [*Revoked*]

5. Section 1.87 is revoked.

6. In § 1.123, paragraph (a) is revised to read as follows:

§ 1.123 *Amendments to the drawing.*

(a) No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by the Office. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed. The paper requesting amendments to the drawing should be separate from other papers.

* * * * *

7. In § 1.165, paragraph (b) is revised to read as follows:

§ 1.165 *Drawings.*

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water

color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Nonpermanently mounted copies will be correctly mounted at applicant's expense, § 1.21(1).

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: May 25, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-7504 Filed 5-27-71; 8:49 am]

Published in 36 F.R. 9774; May 28, 1971

Availability of Annual Report on Government Patent Policy

The Combined December 1969 and 1970 Annual Report on Government Patent Policy of the Federal Council for Science and Technology recently has been published.

The report assesses the effectiveness of the 1963 Presidential Statement of Government Patent Policy based on the information available from the seven years' operation, and describes the progress made to date by the Committee on Government Patent Policy.

The report contains:

The revised Memorandum and Statement of Government Patent Policy issued by President Nixon on August 23, 1971 and an explanation of the revisions.

A report on a Government-wide comprehensive patent licensing program. This report contains the proposed licensing regulations to be promulgated by the General Services Administration. It also contains legal memoranda of the Department of Justice which discuss the concept of issuing limited exclusive licenses on Government-owned Inventions.

A statistical analysis of the Government's patent operations for fiscal years 1963 through 1970. This report includes the total number of invention disclosures reported to the Government agencies, the type of patent clauses used in R & D contracts, the extent of patent protection sought by the Government, and the available information on the licensing of Government-owned patents.

A list, by agency, of all statutes, memoranda and regulations pertaining to the allocation of rights to inventions. This list also contains the identity of the office within each agency which has the primary responsibility for Government patent policy matters.

Information on the merger of the Patent Advisory Panel and the Committee on Government Patent Policy of the Federal Council for Science and Technology.

The report may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, for $1.25. A check or money order made payable to the Superintendent of Documents must accompany your order.

O. A. NEUMANN,
Executive Secretary,
Committee on Government Patent Policy
Federal Council for Science and Technology.

Customer Relations Center

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, or interruptions and irregular demands on their time.

The telephone number for this service is (703) 557-2003.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

Patented Files Service

Delays have frequently been experienced in receiving files and other papers ordered from the Federal Records Center at Suitland, Md. To provide better service in this respect, the Patent Office has initiated its own pick up and delivery service to and from the storage facility. Customer orders are now normally filled within two days.

Orders for files may be placed at the Attorneys and Record Room Desk, Building 4, Room 1D01. There is no charge for this service.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

New Application Processing

Because of the delays in processing newly filed applications and the various problems attendant with those delays, a temporary Parallel Application Branch has been established.

This unit is processing all new applications filed after Oct. 27, 1971, and will be mailing application filing receipts within one month of the application filing date. The regular Application Branch will continue to operate and process the inventory of new applications and papers received through Oct. 27, 1971.

As a result of this arrangement, applicants may receive filing receipts on applications filed after Oct. 27, 1971, prior to receiving filing receipts on applications filed before that date.

The temporary Application Branch will continue operations until the regular Application Branch has disposed of its inventory of unprocessed applications. At that time, approximately Apr. 1, 1972, it is planned to resume all processing of newly filed applications in the regular branch by improved methods designed to keep the flow of applications moving on a current basis.

As previously, all applications received by the Patent Office will be microfilmed for record and reproduction purposes. The temporary operation of two application branches will effectively double the output of processed applications and will place excessive demands on our "in-house" microfilming capabilities. Accordingly, the applications being processed in the regular Application Branch will be microfilmed using facilities outside the Patent Office. As a result, these applications will be unavailable for approximately a two week period while they are being microfilmed. Consequently, the filing of requests for copies of these applications may be somewhat delayed.

However, all application copy requests which are submitted subsequent to two weeks after mailing of the filing receipt will be promptly filled. Copies requested at the time of filing the application will be mailed within two weeks after the mailing of the filing receipt.

All mailed inquiries concerning requests for application copies should be addressed to the:

Commissioner of Patents
Washington, D.C. 20231
Attn: Customer Relations Branch

Telephone and in-person inquiries concerning copy requests should be directed to the Customer Relations Desk (703) 557-2003 which is located adjacent the Public Search Room, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va.

All other inquiries about applications undergoing Application Branch processing should be addressed or directed in the usual manner.

ROBERT GOTTSCHALK,
Nov. 22, 1971. *Acting Commissioner of Patents.*

Registration to Practice

The following list contains the names of all applicants for registration to practice before the United States Patent Office who attained passing grades in the examination of September 7, 1971. Information tending to affect the eligibility of any of said applicants on moral or ethical grounds should be furnished the Commissioner of Patents on or before January 24, 1972.

ROBERT GOTTSCHALK,
Chairman, Committee on Enrollment.

Nov. 23, 1971.

List of Applicants Who Passed the Examination for Registration to Practice Before the Patent Office Held September 7, 1971

A

Allen, George W., 910 Monastery, #2, Cincinnati, Ohio 45202
Andrews, John S., 18 Thrush Drive, East Brunswick, N.J. 08816
Armstrong, Edward P., 8005 W. Barnard Ave., Greenfield, Wis. 53220
Arno, James A., 859 W. Northbend Road, #514, Cincinnati, Ohio 45224
Asaman, Sanford J., P.O. Box 5, Monticello, N.Y. 12701

B

Bak-Boychuk, Igor M., 1031 Lakeside Ave., Philadelphia, Pa. 19126
Barrett, Patrick J., 541 Patricia Lane, Palo Alto, Calif. 94303
Bauer, Charles L., 500 E. 85th, #23D, New York, N.Y. 10028
Baumeister, Mary K., 7545 N. Winchester, Chicago, Ill. 60626
Becker, Robert W., 506 Riddle Road, #11, Cincinnati, Ohio 45220
Begley, Dennis F., 3338 Webley Court, Annandale, Va. 22003
Belstline, Mary M., P.O. Box 5201, China Lake, Calif. 93555
Blumenthal, David A., 4864 W. Braddock Road, #203, Alexandria, Va. 22311
Boller, George L., 1520 Ford Bldg., Detroit, Mich. 48226
Boston, Kirby L., 44 Montgomery St., 39th Fl., San Francisco, Calif. 94104
Boyd, Sylvia L., 28 State St., Ste. 2100, Boston, Mass. 02109
Brenner, Leonard C., 6141 Leesburg Pike, #306, Falls Church, Va. 22041
Brooks, Ernie L., 34854 Moravian Drive, #115, Sterling Heights, Mich. 48077
Brown, Robert A., 2530 Shannon Road, Northbrook, Ill. 60062
Browne, Robert E., 1412 Hinman Ave., Evanston, Ill. 60201

C

Cage, Kenneth L., 1 Longmeadow Drive, Gaithersburg, Md. 20760
Caldwell, Rodney K., 2050 Post Oak Tower, Houston, Tex. 77027
Cannon, James J. Jr., 14 Wildwood Road, Wayland, Mass. 01778
Carroll, Albert W., 3008 Primrose Lane, Dallas, Tex. 75234
Chrystal, John J., 53 W. Jackson Blvd., Chicago, Ill. 60064
Clark, Richard S., 51 Morningside Drive, Ossining, N.Y. 10562
Collins, John M., 7022 S. Shore Drive, Chicago, Ill. 60649
Conover, Richard C., 15 Highbrook Ave., Pelham, N.Y. 10803
Crall, Hugh C., 75 Harvard St., Leominster, Mass. 01453
Cunningham, William B. Jr., 12028 Charter House Lane, Creve Coeur, Mo. 63141

D

Darden, John A., P.O. Box 431, Las Cruces, N. Mex. 88001
Denson, William D., 290 Narragansett Ave., Lawrence, N.Y. 11559
DeVellis, Raymond J., 1600 S. Eads St., #802S, Arlington, Va. 22202
DeYoung, Joel J., 2928 N. 30th St., Alexandria, Va. 22302
Dhuey, John A., 2128 Maple Ave., Evanston, Ill. 60201.
Dolgorukov, D. Edward, 20595 Washington, Roseville, Mich. 48066
Dusyn, Kenneth F., 500 E. 83rd St., #14M, New York, N.Y. 10028
Dyer, Richard P., 2800 Cortland Place NW., Washington, D.C. 20008

E

Edelman, Monroe D., 10 Sedgemoor Court, Williamsville, N.Y. 14221
Eriksen, Neil O., 40 Amelia Court, Staten Island, N.Y. 10310
Evans, Joseph D. 4705 N. 20th Road, #9, Arlington, Va. 22207
Evenson, Donald D., 3230 S. 28th St., Alexandria, Va. 22302

F

Farr, John B., 1809 E. 46th Place, Tulsa, Okla. 74105
Farrell, James J., 29 Aldegaran Drive, R.D. #2, Dover, N.J. 07801
Ferlise, Victor J., 17 Lodi St., Hackensack, N.J. 07601
Fisher, Robert J., 2132 Prentiss Drive, #201, Downers Grove, Ill. 60515
Fosnaught, K. Donald, 240 Gates Manor Drive, Rochester, N.Y. 14606
Franze, Anthony J., Midland Apts., #M-16, Midland Drive, Norwich, N.Y. 13815
Freedman, Barry H., 2 Manor Court, Bldg. 3, New Brunswick, N.J. 08901
Frew, James D., 3109 S. 14th St., Arlington, Va. 22204.

G

Garner, Melvin C., 211 E. 18th St., New York, N.Y. 10003
Garvic, John D., 1500 Arlington Blvd., #604, Arlington, Va. 22209
Getchius, James J., 711 Jackson St., Oshkosh, Wis. 54901
Gordon, Alan H., 1530 N. 12th St., Arlington, Va. 22209
Grafel, Gary F., 306A Thompson St., China Lake, Calif. 93555
Gray, Arthur D., 440 E. 23rd St., New York, N.Y. 10010
Greenberg, Howard R., 10 Spier Ave., Rochester, N.Y. 14620
Greenfield, Mark A., 3219 W. 57th St., New York, N.Y. 10019
Greenstein, Martin R., 4419 Black Partridge Lane, Lisle, Ill. 60532
Greer, Roger D., 1908 B. Colfax St., Evanston, Ill. 60201
Gunther, John M., 3 Powder Horn Lane, Acton, Mass. 01720
Gustafson, Steven R., Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659

H

Haas, Donald F., 803 Bancroft Circle, Springdale, Ohio 45246
Hall, Frank B., 855 N. Northwest Hwy., Park Ridge, Ill. 60068
Halpern, Melvin L., 3570 Powder Mill Road, Beltsville, Md. 20570
Handal, Anthony H., 1900 S. Eads St., Arlington, Va. 22202
Handelman, Joseph H., 23 Beaumont Drive, New City, N.Y. 10956
Hartmann, Herman G., 1147 20th Ave. E., Seattle, Wash. 98102
Hauser, William P., R.D. #1, Cranbury Road, Cranbury, N.J. 08512
Hedegard, Alan H., 284 Osage Drive, P.O. Box 621, Salinas, Calif. 93901
Hellman, Lewis R., 17461 Stamwich, Livonia, Mich. 48152
Higgins, James F., 9 Browning Drive, Livingston, N.J. 07039
Hoel, John E., 5000 7th Hoad S., #302, Arlington, Va. 22204
Hoffman, John F. 1409 N. Fairfax Drive, Arlington, Va. 22209
Holloway, William W. Jr., 73 Jarman Road, Sudbury, Mass. 01776

I

Iribeck, Dennis H., 54 Domain St., Staten Island, N.Y. 10314
Irwin, James, 412 5th Ave., New Kensington, Pa. 15068
Isaac, John L., 528 W. Oakdale, #225, Chicago, Ill. 60657
Isakoff, Lawrence, 1425 Drake Road, Green Acres, Wilmington, Del. 19803

J

Jackson, Robert R., 155 E. 38th St., #12-G, New York, N.Y. 10016
Jacobs, Bruce F., 530-1 Regiscourt, Andalousia, Pa. 19020
Jacover, Jerold A., 1704 19th St. NW., Washington, D.C. 20009
Jansson, Peter N., 122 Mowhawk Drive, Clarendon Hills, Ill. 60514
Jecminek, Albert A., 3030 Oberon Drive, Walnut Creek, Calif. 94956
Jirauch, Charles W., 1354 S. Finley Road, #2-0, Lombard, Ill. 60148

K

Kaming, Joseph S., 111 W. 88th St., New York, N.Y. 10024
Katzoff, Howard S., 1000 Ivy Hill Road, Philadelphia, Pa. 19150.
Kelley, Charles J., Box 3926, Wilmington, Del. 19807
Khayat, Saadideen I., 503 Devon Drive, St. Louis, Mich. 48880
Kipling, James M., 7404 Englewood Place, #3, Annandale, Va. 22003
Klotz, Michael, 151 E. 83rd St., New York, N.Y. 10028
Kramer, Daniel E., 2009 Woodland Drive, Yardley, Pa. 19067
Kraus, John H., 1 Ross Road, #371, Sausalito, Calif. 94965
Kraus, Robert J., Sherry Lake Apts., #20, Conshohocken, Pa. 19428
Krubiner, Alan M., 3 Sunset Court, Montville, N.J. 07045
Kurzman, Marc G., 137—46 70th Road, Flushing, N.Y. 11367

L

Lall, Prithvi C., 21 Dresser St., Newport, R.I. 02840
Lambe, James F., 4209 Franklin, Western Springs, Ill. 60558
LaPaglia, S. Russell, 565 28th Ave., San Francisco, Calif. 04121
LaRoche, Eugene R., 1116 N. Quincy St., Arlington, Va. 22201
Leahy, Charles E., 1320 Harvard, Grosse Pointe Park, Mich. 48230
Lefeve, Douglas H., 5937 Quantrell Ave., #204, Alexandria, Va. 22312
Lehmann, Kenneth G., 5 Kent Road, Easton, Conn. 06612
Lieberman, Bernard, 82—40 Austin St., Kew Gardens, N.Y. 11415
Lindgren, Theodore D., 11505 Carrollwood Drive, Tampa, Fla. 33618
Litt, Ronald D., 1106 Park Ave., Plainfield, N.J. 07060
Lockwood, John C., 2468 Clairmont Road, NE., Atlanta, Ga. 30329
Loef, Paul T., 237 Toyopa Drive, Pacific Palisades, Calif. 90272
Long, Charles J., 593 Greendale Road, York, Pa. 17403
Luludis, Frederick, 69 Virginia Ave., Hazlet, N.J. 07730
Lyon, Richard E. Jr., 811 W. 7th St., Los Angeles, Calif. 90017
Lysaught, Thomas F., P.O. Box 21, Northlake, Ill. 60164

M

MacDonald, George W. Jr., 245 W. 104th St., New York, N.Y. 10025
Macleod, Roderick B., 6 Dogwood Place, Armonk, N.Y. 10504
Malin, Craig O., 4955 Calderon Road, Woodland Hills, Calif. 91364
Manuse, Gary L., 1111 Army Navy Drive, Arlington, Va. 22202
Martin, Arthur L., 1115 Kirkham, San Francisco, Calif. 94122
Martin, Julian C., 2310 Shakespeare, Houston, Tex. 77025
Matas, Vyto R., 900 E. 223, Euclid, Ohio 44123
Matthews, Mart C., 12 Algonquin Road, Chelmsford, Mass. 01824
May, John M., Hughes Aircraft Co. Bldg., P.O. Box 90515, Los Angeles, Calif. 90009
Maynard, Alice W., 930 Kiamensi Road, Wilmington, Del. 19804
McCallen, John J., 35 Mayfair Drive, Huntington, N.Y. 11743
McCaully, Ronald J., 26 Buck Run Lane, Malvern, Pa. 19355
McIntosh, Michael D., 838 W. Prentice Place, Littleton, Colo. 80120
McCary, Steve M., 270 Margaret Place, Perrysburg, Ohio 43551
McNeill, James D., 119 Oak St., Rossford, Ohio 43460
Mehler, Raymond M., 16 W. 781 56th St., Clarendon Hills, Ill. 60514
Mersereau, Charles G., 1100 E. 132nd St., Burnsville, Minn. 55378
Meyer, Robert E., 59 Old Colony Road, Stamford, Conn. 06907
Mihalik, John A., 128 North Carolina Ave. SE., Washington, D.C. 20003
Miller, John E. Jr., 3818 Davis Place NW., Washington, D.C. 20007
Miller, Richard L., 12 Parkside Drive, Dix Hills, N.Y. 11746
Miller, Stanley M., 3148 Hartwick Lane, Fairfax, Va. 22030
Mohrlock, Hugo F., 2867 Grandview St., San Diego, Calif. 92110
Monahan, William J., Lot 4, Tucker Drive, Williamsburg, Va. 23185
Moran, John F., 6 Knollwood Road, Hazlet, N.J. 07730
Moran, Tom M., 2941 Chabot Drive, San Bruno, Calif. 94066
Moriarty, John V., 111 Monument Circle, Rm. 1100, Indianapolis, Ind. 46204
Morrissey, John J., 684 Arguello Blvd., #4, San Francisco, Calif. 94118
Myrick, Donald E., 49 Golden Larch Drive, Naperville, Ill. 60540

N

Needle, William H., 769 Houston Mill Road NE., #5, Atlanta, Ga. 30329
Nehrkorn, William H., 2910 W. National Ave., Milwaukee, Wis. 53215
Nelis, Theodore F., 3153 Old Hwy. 8, Minneapolis, Minn. 55418
Nelson, Joseph S., 1 Druid Circle, Longmeadow, Mass. 01106
Noble, James E., 5090 Coleridge Drive, Fairfax, Va. 22030
Norris, William F., P.O. Box 45012, Tulsa, Okla. 74145
Norvall, William C. Jr., 2511 Willowick, #116, Houston, Tex. 77027

O

O'Flaherty, John F., 6206 Tyner St., Springfield, Va. 22152
O'Konski, Thomas C., Parkview at Madison, #5C, Laurence Harbor, N.J. 08879
O'Neill, Robert E., 5033 7th Road S., Arlington, Va. 22204

P

Palan, Perry, 1204 Princeton Place, Rockville, Md. 20850
Palmer, John L., 567 Greenleaf Meadows, Rochester, N.Y. 14612
Park, Jack H., 8423 Edgemoor St., Houston, Tex. 77036
Patterson, Jerome A., 300 3rd St. NE., #203, Washington, D.C. 20002
Paul, Philip T., 23 Summit Road, Naugatuck, Conn. 06770.
Peterson, Stephen L., 2591 Olde Hill Court, Columbus Ohio 43221
Phillips, Thomas M., 215 W. 10th Ave., #C, Columbus, Ohio 43201
Pingel, G. Brian, 780 N. Water St., Milwaukee, Wis. 53202
Pittenger, James E., 9300 Nester Road, Fairfax, Va. 22030
Pollock, Robert E., 9022 Foxhunter Lane, Cincinnati, Ohio 45242
Potts, Anthony Jr., 6 Well Fleet Drive, Media P.O., Pa. 19063

Q

Quast, Walter P., 69 Moore Ave., Waldwick, N.J. 07463

R

Reese, William D., 109 N. Knight, Park Ridge, Ill. 60068
Reinert, Andrew J., 117 City View, Rte. 3, Ponca City, Okla. 74601
Rexford, Dean R., E. I. du Pont de Nemours & Co., Inc., Box 525, Wilmington, Del. 19899
Reynolds, Donald P., 635 S. Grant, Hinsdale, Ill. 60521
Richter, David J., 11698 Hanover Road, Cincinnati, Ohio 45240
Robins, W. Ronald, 2534 First City National Bank Bldg., Houston, Tex. 77002
Romany, John M., 2000 S. Eads St., #616, Arlington, Va. 22202
Rose, David A., 2121 Albans, Houston, Tex. 77005
Rose, David L., 114 Dorset Drive, South Plainfield, N.J. 07080
Rosenquist, John E., 229 Marengo, Forest Park, Ill. 60130
Roth, Gregory L., 915 N. Garfield, #B, Alhambra, Calif. 91801
Roth, W. Norman, 3600 Wilshire Blvd., Los Angeles, Calif. 90005
Russell, M. Reid, 1438 S. 15th East, Salt Lake City, Utah 84105

S

Santoro, Frank A., 2230 Lewis Place, South Plainfield, N.J. 07080
Sato, Susumu, 7505 Democracy Blvd., #A225, Bethesda, Md. 20034
Scahill, Edward J. Jr., 131 Marien Ave., North Adams, Mass. 01247
Scanlon, William B., 4721 Kenmore Road, Indianapolis, Inc. 46226
Scearce, Bobby D., 10605 Jamaica Road, Carlisle, Ohio 45005
Schaerli, John A., 433 Laurel St., Des Plaines, Ill. 60016
Schuler, Lawrence D., 501 George St., New Brunswick, N.J. 08903
Scott, Forrest L., 741 Marland Drive, Ponca City, Okla. 74601
Shaw, Ronald R., 1601A Arnold Drive, Chanute AFB, Ill. 61866
Shiber, Samuel, P.O. Box 302, Des Plaines, Ill. 60018
Shimoia, Howard G., 2128 Wyandotte Ave., Lakewood, Ohio 44107
Silber, Siegmar, 452 E. 38th St., Paterson, N.J. 07504
Silverman, Melvin R., 19 Lyall Road, Clifton, N.J. 07012
Silverstein, David, 419 Hughes Hall, Cornell Law School, Ithaca, N.Y. 14850
Slater, Mandel E., 20 Himoor Circle, Randolph, Mass. 02368
Slobod, Jack D., 8704 Dulwick Court, Laurel, Md. 20810
Slone, Thomas J., 11518 Imhoff Court, Cincinnati, Ohio 45240
Smith, Walter E. III, 122 Manor Pkwy., Lincroft, N.J. 07738
Sokolowski, Stanley W., 70 Ravine Drive, Matawan, N.J. 07747
Sos, Emil F. Jr., 22230 Euclid Ave., Euclid, Ohio 44117
Spector, Robert, R.F.D. #2, Califon, N.J. 07830
Speranza, William J., 10 Ascot Road, Yonkers, N.Y. 10710
Sprunger, Powell L., 108 Amarillo Drive, Carpentersville, Ill. 60110
Stein, David A., 91 Exeter Road, Williamsville, N.Y. 14221
Stoltz, Richard A., 142 Burke Drive, Monroeville, Pa. 15146
Strode, Joseph A., 330 E. Polk, #E, Richardson, Tex. 75080

T

Tachner, Leonard, 17708 Oak Tree Lane, Irvine, Calif. 92664
Teall, Robert R., 1638 Vernon Road, Trenton, Mich. 42183
Teeter, Frederick J., 965 Highview Road, Pittsburgh, Pa. 15234
Thibault, Harry A., 325 Winston Court, Hoffman Estates, Ill. 60172
Thurman, Ronald V., 2420 Republic National Bank Tower, Dallas, Tex. 75201
Tomaszewski, John J., 35 Virginia Ave., Rockville Centre, N.Y. 11570
Torrente, John J., 16 Nyma Way, Succasunna, N.J. 07876

V

Vestal, Tommy R., P.O. Box 2989, Asheville, N.C. 28802
Vezeau, Timothy J., 5200 Carriage Way Drive, #114, Rolling Meadows, Ill. 60008
Vickrey, Rufus D., Scott Paper Co., Scott Plaza, Philadelphia, Pa. 19113

W

Waite, Frank R., 16 Sorrel Drive, Surrey Park, Wilmington, Del. 19803
Waldbaum, Maxim H., 100 Park Ave., New York, N.Y. 10017
Walton, Henry M., 115 S. Stevens Ave., Decatur, Ill. 62522
Ward, John P., 228 Roanoke Ave., Cuyahoga Falls, Ohio. 44221
Watson, C. Michael, 1524 U.S. Hwy. 22, Mountainside, N.J. 07092
Weiss, Leonard, 10 Mountain Road, Farmington, Conn. 06032
Whitley, Arthur F., 119 Sinclair Ave., Union N.J. 07083
Wilder, Robert V., 777 Wallace Drive, Warminster, Pa. 18974
Winger, Jon C., 29835 Rambling Road, Southfield, Mich. 48076
Wolensky, Michael K., 1600 S. Eads St., #729–S, Arlington, Va. 22202.

Y

Yamaoka, Joseph H., 86—15 Broadway, Elmhurst, N.Y. 11373

Z

Zafman, Norman, 353 S. Doheny Drive, Beverly Hills, Calif. 90211

Access to Patent Application and Interference Files

In order to insure that access to patent application and interference files is given only to persons who are entitled thereto or who are specially authorized to have access under Rule 14 of the Rules of Practice in Patent Cases, and to insure also that the file record identifies any such specially authorized person who has been given access to a file, the following practice will be observed by all personnel of the Patent Office:

1. Access, as provided for in the Rules of Practice, will be given on *oral request* to any applicant, patentee, assignee, or attorney or agent of record in an application or patent only upon *proof of identity* or upon *recognition* based on personal acquaintance.
2. Where a power of attorney or authorization of agent was given to a registered firm prior to July 2, 1971, access will be given upon oral request as in paragraph 1 above to any registered member or employee of the firm who has signatory power for the firm.

3. Unregistered employees of attorneys or agents, public stenographers, and all other persons not within the provisions of paragraphs 1 and 2 above will be given access only upon presentation of a *written authorization for access* signed by a person specified in paragraph 1 above, which authorization will be entered as a part of the official file.

ROBERT GOTTSCHALK,
Nov. 24, 1971. *Acting Commissioner of Patents.*

STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL–327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL–327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL–85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL–327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

Public Records Certification Desk

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents, and selected papers from patented application files. The usual fee for this service ($1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of Building #2.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,604,313, R. W. Grantham, DRYERS; 2,643,463, same, LAUNDRY APPARATUS, filed Feb. 12, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c251. *Paulette Grantham et al.* **v.** *McGraw-Edison Co.* **Filed mandate U.S.C.A. order is reversed and cause is remanded for further proceedings in USDC, July 8, 1971.**

2,643,463. (See 2,604,313.)

2,661,084, J. J. Steffan, DOOR FRAMES; 2,678,843, same, KEEPER MECHANISM; 2,765,884, same, DRY WALL JAMB; 3,194,363, Steffan and Williams, DOOR FRAMES; 3,265,427, J. L. Williams, METAL DOOR JAMB STRIKE PLATE ASSEMBLIES, filed June 29, 1971, D.C., E.D. Mo. (St. Louis), Doc. 71C401(A), *Dolores Williams, also known as Dolores Rollhous* **v.** *Jelico Mfg. Co. and Jelina Tool and Mfg. Co.*

2,664,162, Howard, McGowen, Jr. and Moore, MEANS FOR INSTALLING AND REMOVING FLOW VALVES; 2,679,903, McGowen, Jr. and Moore, Jr., MEANS FOR INSTALLING AND REMOVING FLOW VALVES OR THE LIKE; 3,074,485, H. E. McGowen, Jr., LATCH FOR RETRIEVABLE VALVES OR THE LIKE, filed Aug. 12, 1971, D.C., N.D. Tex. (Fort Worth), Doc. CA–4–1805, *CAMCO, Incorporated, Perry R. Bass, Inc. and Sid W. Richardson* **v.** *Teledyne, Inc. and Teledyne Merla.*

2,667,243, H. D. Fenske, CONVEYANCE CONSTRUCTION; 3,010,822, Altenburger and Bourke, COLUMBIUM CONTAINING STEELS, PROCESS FOR THEIR MANUFACTURE AND ARTICLES PREPARED THEREFROM, filed May 24, 1967, D.C. Md. (Baltimore), Doc. 18371, *National Steel Corporation* **v.** *Baltimore & Ohio Railroad and Armco Steel Corporation (additional defendant per amended complaint filed Nov. 2, 1967).* **Order, dismissing the amended complaint with prejudice, Aug. 12, 1971.**

2,678,843. (See 2,661,084.)

2,679,903. (See 2,664,162.)

2,765,884. (See 2,661,084.)

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHOD OF USE; 2,990,382, Wagner and Fitzgerald, COMPOSITION COMPRISING HYDRAULIC CEMENT, METHYL CELLULOSE AND RE-EMULSIFIABLE POLYVINYL ACETATE, METHOD OF PREPARING SAME AND MORTAR PREPARED THEREFROM, filed June 14, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1407–FW, *Tile Council of America, Inc.* **v.** *Custom Building Products, Inc., Mike Bilak and Thomas R. Peck.*

2,948,928, Ebneth and Falk, PROCESS FOR MANUFACTURING FOAMED POLYURETHANE ARTICLES, **filed** Mar. 11, 1971, D.C.N.J. (Newark), Doc. 363–71, *Mobay Chemical Company et al.* v. *Hudson Foam Plastics Corporation et al.* **Same, filed** Mar. 12, 1971, D.C., District of Columbia (Washington), Doc. 529–71, *Mobay Chemical Company et al.* v. *Hudson Foam Plastics Corporation et al.*

2,980,982. (See 3,214,899.)

2,990,382. (See 2,934,932.)

3,010,822. (See 2,667,243.)

3,038,964. (See 3,582,553.)

3,045,240. (See D. 188,460.)

3,074,485. (See 2,664,162.)

3,084,584. (See Re. 25,278.)

3,194,363. (See 2,661,084.)

3,214,899, Wininger and Dyer, CORDAGE PRODUCT; **2,980,982,** Costa, Le Boeuf and Lefevre, FIBROUS ARTICLE, **filed** June 21, 1971, D.C., N.D. Ala. (Birmingham), Doc. 71–545–E, *Eastman Kodak Co.* v. *Indian Head Inc.*

3,237,485, J. M. Van Vleet, METHOD OF TAP MANUFACTURE, **filed** July 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1683, *Balax, Inc.* v. *Continental Screw Co.*

3,265,437. (See 2,661,084.)

3,392,875, K. R. Bockenstette, STACKING TRAY WITH 90° NESTING, **filed** June 21, 1971, D.C., S.D. Ohio (Dayton), Doc. 4075, *Ekco Products, Inc. and Vanguard Industries, Inc.* v. *Dare Plastics, Inc.*

3,436,787, W. H. Wisdom, STEAM AND VACUUM NOZZLE; **3,439,374,** same, **filed** Feb. 9, 1971, D.C., S.D. Fla. (Miami), Doc. 71–206–JLK, *Steamatic, Inc.* v. *Edward H. Crane and Steam-O-Vac, Inc.* Order of dismissal with prejudice to the plaintiff, July 15, 1971.

3,439,374. (See 3,436,787.)

3,441,027, I. S. Lehman, COMPOUND SUPPORT, **filed** Sept. 7, 1970, D.C., S.D. Fla. (Miami), Doc. 70–1366–C–JLK, *Ira S. Lehman* v. *Stephen Michelson and All Orthopedic Appliance.* Consent decree, plaintiff owner of said patent; defendants have infringed and are permanently enjoined. Defendants' counterclaim dismissed with prejudice, June 24, 1971.

3,453,493, J. B. Godwin, Jr., STATIC CABLE SYSTEM FOR FUEL TANKS, **filed** July 12, 1971, D.C., S.D. Tex. (Houston), Doc. CA 71–H–760, *James B. Goodwin, Jr.* v. *Olin Corporation.*

3,475,561, Krasin and Greene, TELEPHONE CARRIER SYSTEM HAVING SELF-CONTAINED INDEPENDENTLY ATTACHABLE LINE TAP UNITS, **filed** May 26, 1971, D.C., E.D.N.C. (Raleigh), Doc. 1232–C, *Superior Continental Corporation* v. *Anaconda Wire and Cable Company.*

3,485,312, Swenson and Skime, SNOWMOBILE TREAD DRIVE AND SUSPENSION SYSTEM, **filed** Feb. 9, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70–C–65, *Arctic Enterprises, Inc.* v. *Dolenshek Marine, Inc.* Plaintiff's notice of voluntary dismissal pursuant to Rule 41(a) F.R.C.P., July 13, 1971.

3,555,677, A. J. Cusato, WIRE CUTTING TOOL, **filed** July 14, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71–1745, *Henry Mann, Inc.* v. *Silverman's.*

3,582,553, A. G. Bose, LOUDSPEAKER SYSTEM; **3,038,964,** same, **filed** July 12, 1971, D.C., S.D.N.Y., Doc. 71–C–3103, *Bose Corporation* v. *Linear Design Labs., Inc.*

3,589,793, L. E. Curtiss, GLASS FIBER OPTICAL DEVICES, **filed** June 29, 1971, D.C. Del. (Wilmington), Doc. 4165, *Lawrence E. Curtiss et al.* v. *Warner-Lambert Co.*

Re. 24,992, E. E. Ellies, METHOD OF TREATING FRESH MEATS, **filed** Apr. 7, 1971, D.C., S.D. Ohio (Columbus), Doc. 71–74, *Tee-Pak, Inc.* v. *St. Regis Paper Company.*

Re. 25,278, J. J. Borell, MUSICAL INSTRUMENT; **3,084,584,** A. Iorio, ELECTRICAL MUSICAL INSTRUMENT, **filed** Jan. 22, 1970, D.C., S.D.N.Y., Doc. 70–272, *Iorio Instruments Inc. et al.* v. *Bell Accordion Corp. et al.* (amended).

Re. 26,130, Bellinger and Chapdelaine, SOLUTION AND METHOD FOR BRIGHTENING CADMIUM, **filed** June 25, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1528, *Conversion Chemical Corp.* v. *Du Tone Chemical Co. Inc.*

D. 188,460, R. D. Raynor, ONE PIECE SHELL FOR AN INDOOR ANTENNA; **3,045,240,** same, RABBIT EAR ANTENNA, **filed** Feb. 5, 1968, D.C., S.D.N.Y., Doc. 68–C–470, *Clear Beam Antenna Corporation* v. *JFD Electronics Corporation.* Stipulation and order of discontinuance with prejudice, June 15, 1971.

Certificates of Correction for the Week of Dec. 21, 1971

Re. 26,978	3,568,577	3,581,902	3,586,813
Re. 27,137	3,568,907	3,582,141	3,586,896
2,995,436	3,571,568	3,582,802	3,587,115
3,341,895	3,572,158	3,582,849	3,587,204
3,429,945	3,573,898	3,582,899	3,587,328
3,515,249	3,575,454	3,583,450	3,587,428
3,522,460	3,575,462	3,583,972	3,587,544
3,530,100	3,575,493	3,584,102	3,587,690
3,536,498	3,576,312	3,584,124	3,588,206
3,545,775	3,577,445	3,584,507	3,588,689
3,546,261	3,577,802	3,584,556	3,589,025
3,547,937	3,577,996	3,584,884	3,589,202
3,549,971	3,578,320	3,584,918	3,589,311
3,552,564	3,578,694	3,585,108	3,589,468
3,552,906	3,578,884	3,585,145	3,589,661
3,554,938	3,579,037	3,585,281	3,589,783
3,555,172	3,579,563	3,585,385	3,590,407
3,555,927	3,579,584	3,585,655	3,590,913
3,556,682	3,579,634	3,585,858	3,590,966
3,557,544	3,580,125	3,585,936	3,591,220
3,558,226	3,580,146	3,586,090	3,591,302
3,561,100	3,580,187	3,586,107	3,591,687
3,561,685	3,580,727	3,586,190	3,592,275
3,562,371	3,581,006	3,586,199	3,592,952
3,564,356	3,581,366	3,586,412	3,593,608
3,566,370	3,581,444	3,586,416	3,594,334
3,566,380	3,581,634	3,586,540	3,597,397
3,566,555	3,581,725	3,586,680	

Disclaimers

2,985,271.—*Lawrence A. Wilson,* Apalachin, N.Y. CLUTCH. Patent dated May 23, 1961. Disclaimer filed May 20, 1971, by the assignee, *International Business Machines Corporation.*

Hereby disclaims all that portion of the term of the patent subsequent to May 17, 1971.

3,228,927.—*Heini Kappeler,* Bettingen and *Robert Schwyzer,* Reihen, Switzerland. METAL COMPLEXES OF NEW TETRACOSAPEPTIDES AND INTERMEDIATES FOR THE PREPARATION THEREOF. Patent dated Jan. 11, 1966. Disclaimer filed Sept. 1, 1971, by the assignee, *Ciba-Geigy Corporation.*

Hereby enters this disclaimer to claim 4 of said patent.

3,239,765.—*Robert L. Carbrey,* Madison, N.J. PHASE SHIFT COUNTING CIRCUITS. Patent dated Mar. 8, 1966. Disclaimer filed Sept. 2, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

3,240,193.—*Max Ephraim, Jr.,* Chicago, and *Carl R. Sakraida,* and *James J. Kotlin,* Downers Grove, Ill. PISTON AND PISTON COOLING MEANS. Patent dated Mar. 15, 1966. Disclaimer filed Sept. 23, 1971, by the assignee, *General Motors Corporation.*

Hereby enters this disclaimer to claims 1 through 4, 7 through 10, and 14 through 16 of said patent.

3,283,131.—*Robert L. Carbrey,* Madison, N.J. DIGITAL SIGNAL GENERATOR. Patent dated Nov. 1, 1966. Disclaimer filed Sept. 2, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 7 and 8 of said patent.

3,515,052.—*Ernest E. Brandes,* Madison, Wis. AIR DISTRIBUTING APPARATUS. Patent dated June 2, 1970. Disclaimer filed Oct. 13, 1971, by the inventor.

Hereby enters this disclaimer to claims 1 to 10 of said patent.

Dedications

3,187,146.—*Roger F. Schrader,* Pittsfield, Mass. BUSHING FUSE PROVIDED WITH A FUSE BODY OF STRONG INSULATING MATERIAL HAVING FLATTENED ENDS. Patent dated June 1, 1965. Dedication filed Oct. 6, 1971, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the entire term of said patent.

3,315,414.—*William A. Nolan* and *John S. Gilles,* Louisville, Ky. EDGEWISE MOVABLE WALL CLOSURE CONSTRUCTION AND METHOD OF MAKING THE SAME. Patent dated Apr. 25, 1967. Dedication filed Oct. 12, 1971, by the assignee, *Reynolds Metals Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,425,123.—*Roland E. Miller,* Orangeville, *Clyde Wayne,* Wilmette, and *William T. Kirby,* Park Ridge, Ill. ELONGATED CHEESE RIBBON CUTTING DEVICE. Patent dated Feb. 4, 1969. Dedication filed Oct. 22, 1971, by the assignee, *Kraftco Corporation.*

Hereby dedicates to the Public the entire term of said patent.

3,557,090.—*Kenneth Butler,* Old Lyme, Conn. UNSATURATED ALIPHATIC ESTERS OF α-CARBOXY ARYL PENICILLINS. Patent dated Jan. 19, 1971. Dedication filed Oct. 13, 1971, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of said patent.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,426,043, P. N. Green and M. Shapero, 2-GUANIDINYLMETHYL-2,3-DIHYDROBENZOFURANS, decided Aug. 26, 1971, Interference No. 97,210, claims 1 and 6.

Patent No. 3,433,750, J. M. Fain and E. McDonnell, NOVEL WATER REPELLENT COMPOSITIONS, decided Oct. 20, 1971, Interference No. 97,188, claim 3.

Patent No. 3,363,099, E. Lind and H. Kramer, METHOD FOR PRODUCING A LATENT ELECTROSTATIC IMAGE ON AN ELECTROSTATICALLY CHARGED RESIN LAYER BY EXPOSURE TO RADIANT HEAT, decided July 30, 1971, Interference No. 96,541, claims 1, 2, 3, 4 and 5.

Patent No. 3,121,698, J. A. Orsino, D. F. Herman and J. J. Brancato, PROCESS OF COATING CELLULOSIC PARTICLES BY POLYMERIZING A 1-OLEFIN ONTO SAID PARTICLES: PROCESS OF REMOVING THE CELLULOSIC PARTICLES FROM THE COATED PARTICLES AND HOLLOW SHELLS OBTAINED THEREFROM, decided July 30, 1971, Interference No. 96,369, claims 4 and 5.

Patents Available for Licensing or Sale

3,102,721. PANTAGRAPH EQUILIBRIUM SPRING MECHANISM. Correspondence to: Paul D. Levie, 2333 N. Central Ave., Phoenix, Ariz., 85004.

3,493,179. SQUEEZE BOTTLE. Tsu Hsuen Lee, Taipei, Taiwan. Correspondence to: Garry, Juettner, Pigott & Cullinan, Suite 2301, 33 N. Dearborn St., Chicago, Ill., 60602.

3,570,130. HOLDING DEVICE FOR SURVEYING INSTRUMENTS. Sheldon Boehm, 5405 Queen Ave. S., Minneapolis, Minn., 55410.

3,581,466. PROCESS OF SEPARATING TETRAFLUOROETHYLENE FROM GAS MIXTURES CONTAINING THE SAME. Kali-Chemie Aktiengesellschaft, Hannover, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,611,989. RECEPTACLE FOR SAFETY RAZORS. William F. Lovelace, 204–B Georgetown Drive, Casselberry, Fla., 32707.

The following 2 patents are offered by: Mrs. Lean L. Troutman, 418 W. Monroe St., Salisbury, N.C., 28144.

D. 217,408. GAS FLAME COMBINED COVER PLATE AND SIMMER.

3,396,749. TEMPERATURE CONTROL HOT AND COLD WATER FAUCET ATTACHMENT.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Application for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 W. Grand Boulevard, Detroit, Mich., 48202.

3,460,760. FUEL INJECTION NOZZLE ASSEMBLY.

General Electric Company is prepared to grant non-exclusive licenses under the following 2 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following 2 patents may be addressed to: Division Patent Counsel, Power Transmission Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,588,520. HIGH-VOLTAGE ELECTRIC CIRCUIT BREAKER WITH HIGH-SPEED STRIPPING MEANS.

3,597,556. VACUUM-TYPE CIRCUIT BREAKER WITH FORCE SUPPLEMENTING MEANS FOR INCREASING CURRENT-CARRYING ABILITIES.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 44 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

D. 222,358. ANTENNA.

D. 222,359. ANTENNA FOR A RADIO OR TELEVISION SET.

3,610,817. TELEVISION SIGNAL SEEKING SYSTEM WITH HORIZONTAL SYNCHRONIZING PULSE DETECTOR CIRCUIT FOR CONTROLLING THE SIGNAL SEEKING.

3,610,819. VIDEO RECORDING WITH ALTERNATE PERIOD INVERSION AND LOW-FREQUENCY PREMPHASIS.

3,610,840. STEREOPHONIC PHONOGRAPH PICKUP WITH SINGLE PAD FOR PIEZOELECTRIC ELEMENT COUPLING, SUPPORT AND DAMPING.

3,610,956. DRIFT-COMPENSATED AVERAGE VALUE CROSSOVER DETECTOR.

3,610,960. SCAN GENERATOR CIRCUIT.

3,611,004. BILATERAL PINCUSHION CORRECTION CIRCUIT.

3,611,012. POWER SUPPLY.

3,611,059. TRANSISTOR ASSEMBLY.

3,611,096. SERVO SYSTEM FOR RECORDER-REPRODUCER APPARATUS UTILIZING FREQUENCY AND PHASE SYNCHRONIZING.

3,611,113. HOMOPOLAR APPARATUS WHICH REQUIRES NO MOVING PARTS FOR PRODUCING DIRECT CURRENT.

3,611,153. BALANCED MIXER UTILIZING STRIP TRANSMISSION LINE HYBRID.

3,611,170. BIAS NETWORKS FOR CLASS B OPERATION OF AN AMPLIFIER.

3,611,176. FREQUENCY CONTROLLED OSCILLATOR.

3,611,183. DOUBLE-ENDED ION LASER TUBE.

3,611,192. BULK SEMICONDUCTOR NEGATIVE RESISTANCE LOADED SLOW-WAVE DEVICE AMPLIFIERS AND OSCILLATORS.

3,612,653. DIGITAL LIGHT DEFLECTOR HAVING LIQUID AND VAPOR STATES.

3,612,654. LIQUID CRYSTAL DISPLAY DEVICE.

3,612,754. COLOR TEMPERATURE CONTROL CIRCUITS.

3,612,757. COLOR TELEVISION KINESCOPE SETUP APPARATUS.

3,612,954. SEMICONDUCTOR DIODE ARRAY VIDICON TARGET HAVING SELECTIVELY INSULATED DEFECTIVE DIODES.

3,613,035. TUNING ARRANGEMENT FOR A STRIP TRANSMISSION LINE IN A HERMETICALLY SEALED PACKAGE.

3,613,773. CONSTANT TEMPERATURE OUTPUT HEAT PIPE.

3,613,976. APPARATUS FOR HANDLING ENDLESS TAPE.

3,614,189. HOLOGRAPHIC MEMORY WITH ILLUMINATION HOLOGRAM PROVIDING REFERENCE AND OBJECT BEAMS.

3,614,200. LIGHT VALVE MATRIX.

3,614,210. LIQUID CRYSTAL DAY/NIGHT MIRROR.

3,614,320. STEREOPHONIC SOUND ENHANCEMENT SYSTEM WITH REVERBERATION CHAMBER.

3,614,400. MAXIMUM LENGTH PULSE SEQUENCE GENERATORS.

3,614,546. SHIELDED SEMICONDUCTOR DEVICE.

3,614,553. POWER TRANSISTORS HAVING CONTROLLED EMITTER IMPURITY CONCENTRATIONS.

3,614,579. SQUEEZE FILM BEARING SERVOSYSTEM.

3,614,645. DIFFERENTIAL AMPLIFIER.

3,614,714. EDGE CONNECTOR WITH POLARIZING MEMBER.

3,614,767. ELECTRONIC PHOTOCOMPOSING SYSTEM THAT FORMS CHARACTERS OF DIFFERENT POINT SIZES.

3,614,785. DOPPLER CORRELATION RADAR SYSTEM.

3,615,449. METHOD OF GENERATING HIGH AREA-DENSITY PERIODIC ARRAYS BY DIFFRACTION IMAGING.

3,615,562. CYANINE DYE PHOTOGRAPHIC FILM.

3,615,856. GERMANIUM-TIN ALLOY INFRARED DETECTOR.

3,615,870. THERMOELEMENT ARRAY CONNECTING APPARATUS.

3,615,942. METHOD OF MAKING A PHOSPHORUS GLASS PASSIVATED TRANSISTOR

3,615,952. PHOTORESIST COMPOSITION AND METHOD OF FORMING AND USING THE SAME.

3,616,348. PROCESS FOR ISOLATING SEMICONDUCTOR ELEMENTS.

Patents Withdrawn From Register

General Electric Company hereby withdraws the following patents from the Register of Patents Available for Licensing or Sale. The patents were listed as being available in the OFFICIAL GAZETTE as indicated below:

3,156,539. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

3,165,403. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

3,169,859. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

3,291,758. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 16, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-11-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-11-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-23-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-12-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-07-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-20-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive
Plant Patents..... Numbers 1,328 to 1,338, inclusive

REISSUES

DECEMBER 21, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

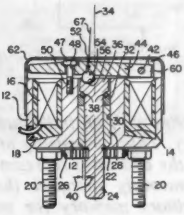
27,247
ROTARY SOLENOID

Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Cliftronics, Inc., Clifton Springs, N.Y.

Original No. 3,419,831, dated Dec. 31, 1968, Ser. No. 593,838, Nov. 14, 1966. Application for reissue Feb. 13, 1970, Ser. No. 11,048

Int. Cl. H01f *7/08*

U.S. Cl. 335—228 21 Claims



A rotary solenoid having only a single antifriction ball converter between the armature, preferably a hinged "clapper" type, and the top surface of the rotatable output shaft. There are a pair of coactive oppositely inclined cam surfaces, one each in the armature and top surface of the output shaft between which is retained the single ball converter for transmitting arcuate pivotal movement of the armature into rotary movement of the output shaft.

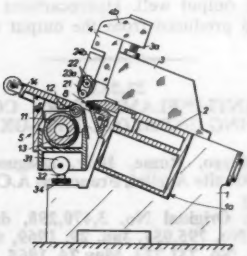
27,248
TANNING AND TAWING MACHINE FOR THE SLITTING OF HIDES AND SKINS

Christian Mercier, Ardeche, France, assignor to Mercier Freres, Annonay, Ardeche, France

Original No. 3,393,538, dated July 23, 1968, Ser. No. 509,815, Nov. 26, 1965. Application for reissue July 21, 1970, Ser. No. 56,984

Int. Cl. C14b *1/14*

U.S. Cl. 69—10 30 Claims



In a roller feed, band knife, leather splitting machine, the arrangement of the lower feed roller for three line mounting between the rear edge of the work feed table, the surface of a driving drum and a bar rearward and below the line of cutting action; the lower feed roller, the feed table, the driving drum and the bar being mounted for movement as a unit from the knife edge.

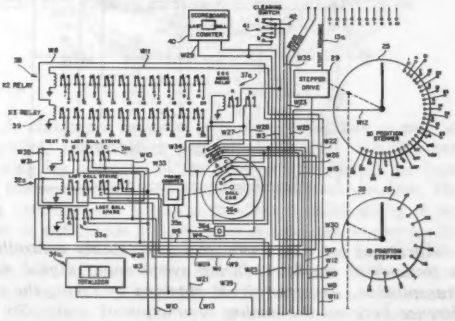
27,249
AUTOMATIC BOWLING SCORE COMPUTER

William D. McJunkin, 2603 Little John Trail SE., Marietta, Ga. 30060, and Joseph A. Webb, Sr., Friendswood, Tex.; said Webb assignor to said McJunkin

Original No. 3,385,600, dated May 28, 1968, Ser. No. 408,862, Nov. 4, 1964. Application for reissue May 28, 1970, Ser. No. 41,654

Int. Cl. A63d *5/04*

U.S. Cl. 273—54 C 11 Claims



An automatic bowling score computer for connection to automatic pinsetting equipment and having a separate individual scoring totalizer for each of a plurality of bowlers; the computer including a rotary camming switch adapted to indicate up to a pin count of thirty being added to an appropriate totalizer for each operation of the pinsetting equipment, plus a pair of relays for doubling and tripling the pinfall sensed by the pinsetting equipment for addition of game score to the appropriate totalizer for each operation of the pinsetting equipment. Associated with each individual scoring totalizer is a set of three relays; one being energized during the scoring of the first ball after a spare to operate the doubling relay of the computer, another being energized during the scoring of the first ball after a strike to operate the doubling relay of the computer, and the third being energized during the scoring of the second ball after a strike to operate the doubling relay of the computer. The circuitry of the computer further provides that when the two preceding balls thrown are a strike involving one of the individual scoring totalizers, the scoring of the first ball thrown after the second strike has both second and third individual relays energized which in turn energize both the doubling and tripling relays for tripling the pinfall addition being added to the associated individual scoring totalizer for that ball.

A ball and frame counter is provided with each of the individual scoring totalizers which in turn operates a control means so as to prevent tripling the pinfall of any ball thrown after the first ball of the tenth frame and to prevent doubling the pinfall of any ball thrown after the sec-

ond ball of the tenth frame, so that each individual scoring totalizer shows a score after each ball is thrown that will be the final score of that game if all subsequent balls thrown in the game score zero.

27,250

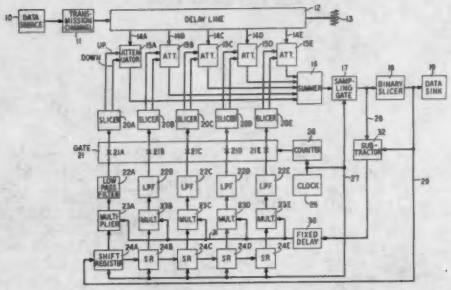
ADAPTIVE EQUALIZER FOR DIGITAL TRANSMISSION SYSTEMS HAVING MEANS TO CORRELATE PRESENT ERROR COMPONENT WITH PAST, PRESENT AND FUTURE RECEIVED DATA BITS

Robert W. Lucky, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original No. 3,368,168, dated Feb. 6, 1968, Ser. No. 460,794, June 2, 1965. Application for reissue Sept. 18, 1969, Ser. No. 862,991

Int. Cl. H04b *3/04*

U.S. Cl. 333—18 6 Claims



Apparatus for adaptively and continuously controlling a transversal equalizer during synchronous digital data transmission. An error signal obtained by taking the difference between the analog summation of a plurality of differentially delayed and selectively attenuated samples of a received data wave and best estimates of the sense of detected data bits is correlated with stored data estimates corresponding to past, present and future received data bits. Correlation signals averaged over an arbitrary time interval are sampled and selectively applied to equalizer tap attenuators in order to determine the individual directions of incrementation required to minimize the magnitude of the error signal.

27,251

MEMORY PROTECTION SYSTEM

Gene M. Amdahl, Saratoga, Calif., Edwin D. Councill, Wappingers Falls, N.Y., Robert J. Flaherty, Pleasant Valley, N.J., and Joseph J. Zagursky, Shelburne, Vt., assignors to International Business Machines Corporation, New York, N.Y.

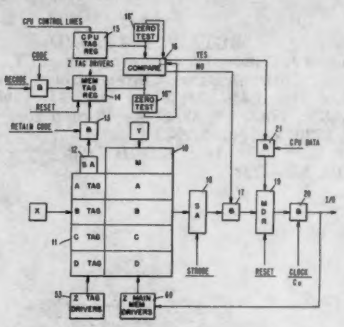
Original No. 3,328,765, dated June 27, 1967, Ser. No. 334,714, Dec. 31, 1963. Application for reissue June 23, 1969, Ser. No. 846,984

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 8 Claims

In a data processing system, blocks of addresses in a main memory are reserved to predetermined users. An auxiliary memory holds a key for each block of the main memory. During a memory accessing operation, the key that corresponds to the addressed block in main memory is read from the auxiliary memory and compared with the key assigned to the user. In the event of a mismatch, the user is prevented from altering the contents at the addressed location in the main memory.

The invention provides a simple and direct relationship between each address in the auxiliary memory and the corresponding block of addresses in the main memory. In the embodiment of the invention to be described in detail, the main memory includes ferrite cores that are selected by the coincidence of currents on X and Y dimension wires. In the auxiliary memory, a single word wire is energized to select cores of an addressed word. Each X dimension wire of the main memory is connected



to conduct in series with an individual word wire of the auxiliary memory. Thus, energizing an X dimension wire to select any of the addresses represented by the cores on the wire simultaneously energizes the appropriate word wire in the auxiliary memory for reading the memory protect key.

27,252

THERMAL METHOD FOR PRODUCING HEAVY OIL

Isadore Sklar and G. W. Walker, Bakersfield, Calif., assignors to Mobil Oil Corporation

No Drawing. Original No. 3,379,246, dated Apr. 23, 1968, Ser. No. 663,168, Aug. 24, 1967, which is a continuation of Ser. No. 444,395, Mar. 31, 1965. Application for reissue Mar. 14, 1969, Ser. No. 817,224

Int. Cl. E21b *43/24*

U.S. Cl. 166—251 23 Claims

A method for producing hydrocarbons from a subterranean formation by moving therethrough an in situ combustion front between input and output wells. Formation fluid is displaced toward each output well. When directional movement of the front, which may be monitored, will displace formation fluid beyond the drainage radius of an output well, steam is injected, one or more times, in a quantity into such well to increase the flow of formation fluid from the output well sufficiently to correct directionally the movement of the front for displacing greater amounts of formation fluid into the drainage radius of this output well. Hydrocarbons are recovered from the fluid produced from the output wells.

27,253

TOPICAL ANTI-INFLAMMATORY COMPOSITION CONTAINING (INDAZOLE-3-YL)-OXYALKANOIC ACIDS

Guiseppe Palazzo, Rome, Italy, assignor to Aziende Chimiche Riunite Agelini, Francesco A.C.R.A.F. S.p.A., Rome, Italy

No Drawing. Original No. 3,470,298, dated Sept. 30, 1969, Ser. No. 795,051, Jan. 29, 1969, which is a division of Ser. No. 731,723, May 24, 1968, which, in turn, is a continuation-in-part of Ser. No. 606,594, Jan. 3, 1967. Application for reissue Jan. 26, 1970, Ser. No. 10,670

Claims priority, application Italy, Aug. 29, 1966, 21,810

Int. Cl. A61k *23/00, 27/00*

U.S. Cl. 424—273 6 Claims

Cosmetic compositions contain as anti-inflammatory agents (indazole-3-yl)-oxyalkanoic acids and non-toxic salts thereof.

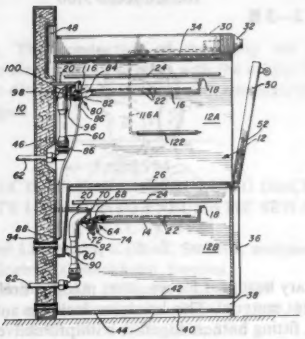
27,254
GAS OVEN IGNITION

Charles C. Lamar, Chicago, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Original No. 3,338,231, dated Aug. 29, 1967, Ser. No. 462,334, June 8, 1965. Application for reissue Apr. 7, 1969, Ser. No. 817,610

Int. Cl. F24c *3/10*

U.S. Cl. 126—39 E 8 Claims



1. In a gas range oven having a compartment with a bake burner below and a high broiler burner within said compartment and wherein the combustion products from the bake burner rise at least to the level of the broiler burner, a continuously burning primary aerated pilot burner in ignition relation to the broiler burner, a primary air inlet compartment having a relatively unrestricted opening to the oven compartment so as to be subject to pressure fluctuations in the compartment and having also restricted air inlet openings communicating with a source of substantially uncontaminated primary air, and a conduit communicating with the pilot burner and having its inlet end in the lower part of the air inlet compartment for supplying said pilot burner with substantially uncontaminated primary air, whereby substantially balanced pressures are maintained in the pilot burner in spite of pressure fluctuations.

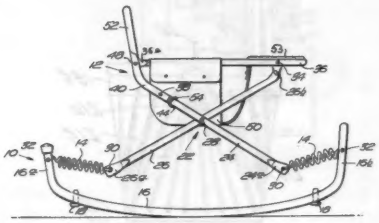
27,255
CHILDREN'S PLAY SEAT

Raymond G. Pierson, Jr., Bedford, Pa., assignor to Hedstrom Union Company, Fitchburg, Mass.

Original No. 3,427,071, dated Feb. 11, 1969, Ser. No. 643,723, June 5, 1967, which is a division of Ser. No. 549,108, Apr. 15, 1966. Application for reissue May 20, 1970, Ser. No. 39,172

Int. Cl. A47d *13/10*

U.S. Cl. 297—258 2 Claims



A children's foldable play seat comprises a pair of parallel, spaced-apart rockers. A flexible, bag-like seat having leg openings at the bottom of and near the front of the seat is resiliently suspended from said rockers. The leg openings are arranged to allow a child sitting in the seat to extend his legs down under the seat to engage the ground so he can propel the seat with his feet. Tubular members for mounting casters are affixed to the rockers and oriented at angles relative to the axes of the rockers so that the members are generally vertical when the lowermost portions of the rockers engage the ground.

PATENTS

GRANTED DECEMBER 21, 1971

GENERAL AND MECHANICAL

3,628,189

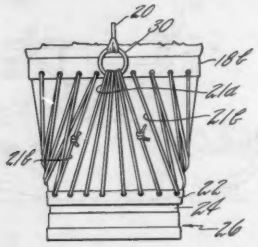
PRESSURE SUIT LOAD-RELIEVED SIZE-ADJUSTMENT JOINTS

Michael A. Marroni, Jr., Weatogue, and Douglas E. Getchell, Windsor Locks, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of application Ser. No. 785,612, Dec. 20, 1968, now abandoned. This application June 22, 1970, Ser. No. 48,946

Int. Cl. A62b *17/00*

U.S. Cl. 2—2.1 A **3 Claims**



Plug loads in a pressurized suit are transmitted across size-adjusting joints in order to relieve convolute distortion which increases the torque required for flexing the various portions of the pressurized suit. In a first arm embodiment, the plug load restraint terminates in a rigid arm ring; in a second arm embodiment, the plug load restraint terminates in an eyelet which is laced in a fanned out fashion to the opposite side of the adjustment joint, thereby to spread the load to a substantially rigid wrist ring. In a leg embodiment, the plug load restraint of the knee section is joined to a plug load restraint of an ankle section directly, by an adjustable strap, the ankle section terminating in a load-distributing member near the sole of the boot.

3,628,190

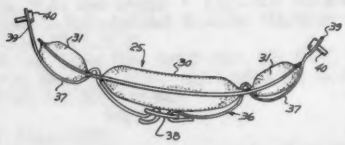
HELMET NECKGUARD

Stephen J. Molitoris, Farmington, Mich., assignor to American Safety Equipment Corporation of Michigan, Detroit, Mich.

Filed Jan. 7, 1970, Ser. No. 1,137

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 A **1 Claim**



A helmet neckguard formed of a horizontally elongated pad arranged within the rear lower edge of a helmet shell for engaging the rear and rear sides of the base of the wearer's skull, and secured to the shell by an adjustable length strap slidably arranged on the rear face of the pad and with its opposite ends fastened to the shell near the ends of the pad, for adjusting the position of the pad relative to the front of the helmet, and thereby the size of the helmet, by adjusting the strap length.

3,628,191

HEADGEAR FOR WRESTLERS

Bobby E. Douglas, 8 Boyd Avenue, Bridgeport, Ohio

Filed June 8, 1970, Ser. No. 44,345

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 R **5 Claims**

A unitary headgear for wrestlers made entirely from elastic or resilient material. This headgear includes an integral head and chin fitting harness together with protective ear pads and by virtue of the elastic characteristics of the material used, it is capable of a snug but comfortable form fit on different sizes and shapes of heads which is accomplished without the use of any adjustment clamps, buckles, laces or similar adjustment devices that are susceptible of becoming loose or that would be likely to cause injury to the opponent of the wearer.

3,628,192

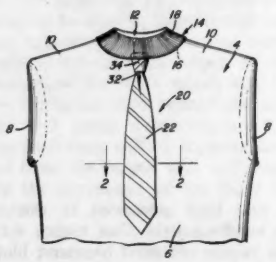
COMBINED TIE AND SHIRT

Frank Artz, Sr., 500 Joseph St., New Orleans, La.

Filed Nov. 8, 1968, Ser. No. 774,377

Int. Cl. A11b *3/00*; A41d *25/00*

U.S. Cl. 2—130 **2 Claims**



A slipover shirt made from stretch-type knit fabric such as "Ban-Lon" or an equivalent launderable knitted material. This shirt has a turtleneck or mock turtleneck collar. It is unique in that it is provided with a simulated four-in-hand necktie also made of knit fabric. This innovation transforms a sport shirt into an acceptable dress shirt.

3,628,193

TACTILE IMAGE PROJECTION SYSTEM

Carter C. Collins, Mill Valley, Calif., assignor to The Institute of Medical Sciences, San Francisco, Calif.

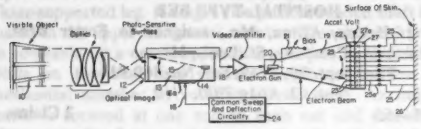
Filed Feb. 19, 1969, Ser. No. 800,909

Int. Cl. A61n *1/36*

U.S. Cl. 3—1 **11 Claims**

A tactile image converter for blind subjects comprises a television camera device the output of which modulates a commutating cathode-ray tube comprising a conductor array sealed in one face thereof. The camera device and commu-

tating tube are scanned in synchronism with one another at a rate producing current pulses in the conductor array having pulse widths preferably in the order of 10 to 100



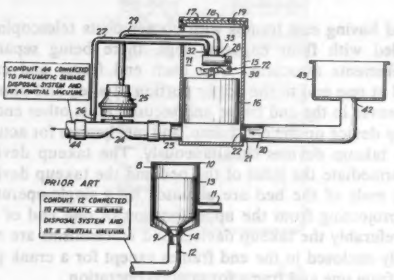
microseconds. The conductors of the array are coupled respectively to electrodes in contact with the subject's skin to produce a two-dimensional electrical skin stimulation pattern of a visible object.

3,628,194

VALVE STRUCTURE FOR CONTROLLING DISCHARGE OF WASTE LIQUID INTO PNEUMATIC SEWAGE DISPOSAL SYSTEM

Sven Algot Joel Liljendahl, Kallhall, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed July 15, 1970, Ser. No. 54,927
Claims priority, application Sweden, Sept. 8, 1969, 12366/69
Int. Cl. E03d *1/00, 5/00, 3/00*
U.S. Cl. 4—10 **12 Claims**


CONDUIT 44 CONNECTED TO PNEUMATIC SEWAGE DISPOSAL SYSTEM AND AT A PARTIAL VACUUM
PRIOR ART
CONDUIT 12 CONNECTED TO PNEUMATIC SEWAGE DISPOSAL SYSTEM AND AT A PARTIAL VACUUM

Waste liquid is discharged into a pneumatic sewage disposal system through a discharge conduit from the outlet of a place in a kitchen or laundry or a fixture in a bathroom like a bathtub or washbasin, for example. Flow control structure is operatively associated with the discharge conduit which opens when liquid starts to flow from the outlet and closes when the flow of liquid stops.

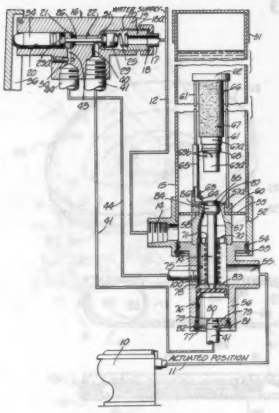
3,628,195

AIR BALANCE FOR WATER CLOSET

E. Chris Skousgaard, Box 805, Lake Arrowhead, Calif.

Filed Mar. 3, 1969, Ser. No. 803,658
Int. Cl. E03d *3/00, 3/10*
U.S. Cl. 4—26 **5 Claims**

A water closet of the tank type in which a limited supply of air is entrapped in the tank by water under pressure of the domestic supply and serves to assist the water pressure in expelling flushing water to the bowl during the flushing cycle having means for maintaining the supply of air at the desired level despite absorption of air by the water, such means including means to resupply air as needed and means to expel excess air.



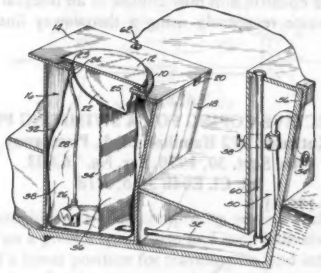
The specific air supply device comprises an inverted cup filled with air on each flushing cycle and having its air supply added to the tank at the start of the next flushing cycle.

3,628,196

FLEXIBLE CHEMICAL TOILET

Ronald G. Quiram, Michigan City, Ind., and Gaylord M. Borst, Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 24, 1969, Ser. No. 869,019
Int. Cl. A47k *11/02;* **B63b** *17/06*
U.S. Cl. 4—115 **10 Claims**



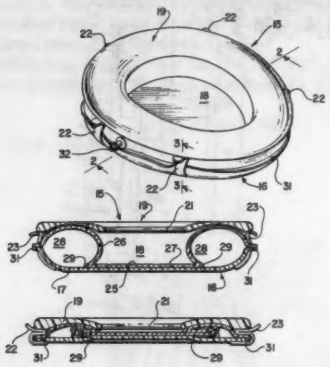
Disclosed herein is a recirculating marine toilet including a bowl having a discharge outlet, a flexible container containing chemically treated fluid located to receive waste fluid from the outlet, a flexible filter screen separating the flexible container into a first compartment for waste fluid and a second compartment for filtered fluid, and a recirculating pump in the second compartment to pump the chemically treated filtered fluid from the second compartment to the bowl to flush waste through the outlet into the first compartment. A vacuum discharge port and an overboard discharge can be provided from the first compartment for removal of waste fluid from the container.

3,628,197

COLLAPSIBLE AND DISPOSABLE BEDPAN

Ruth Lee Leventhal, 440 East 57th St., New York, N.Y., and William R. Gold, 77 East 12th St., New York, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,172
Int. Cl. A61g 9/10
U.S. Cl. 4—113 10 Claims



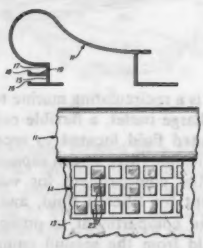
A bedpan is provided which is collapsible and may be disposable. The two main components of the bedpan are a rigid seat which may be sterilized, and a disposable waste receptacle. The waste receptacle consists of an inflatable donut-shaped ring of flexible material, and a membrane of the same material within the ring to retain the waste. The disposable component is designed to facilitate construction in either heat-sealed vinyl, or moulded rubber. The bedpan may be conveniently positioned under the patient in its collapsed state of approximately 1-inch height, inflated to usable size, used, removed, emptied and washed, deflated and reused as required. When no longer necessary, the flexible portion may be detached and disposed of, and the rigid seat sterilized for reuse, cooperating snap elements being provided to attach the seat to the inflatable receptacle. The unit may be inflated by a hand- or foot-operated pump, a compressed air supply, or a charged capsule, either by a patient or by an attendant. An alternate construction may consist of an integral seal and inflatable waste receptacle using a throwaway liner in the receptacle.

3,628,198

PROTECTIVE COPING FOR A SWIMMING POOL

Frederick Katzman, 372 Hamilton Blvd., Piscataway, N.J.

Filed Sept. 30, 1970, Ser. No. 76,803
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.21 7 Claims



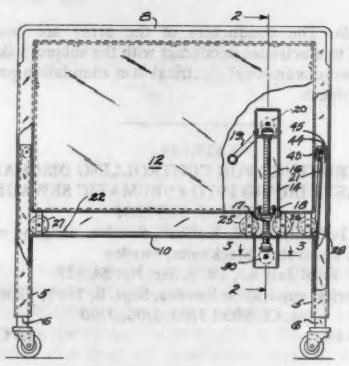
The invention is a swimming pool coping construction having a pair of channels, into the one of which, a swimming pool liner is fitted, and into the other of which, a protective panel is snap-fitted, thereby to present an ornamental face, simulating a tile border.

3,628,199

HOSPITAL-TYPE BED

William J. Helton, Affton, Mo., assignor to Foster Bros. Manufacturing Company, St. Louis, Mo.

Filed Sept. 25, 1969, Ser. No. 860,916
Int. Cl. A61g 7/00, 7/10
U.S. Cl. 5—63 2 Claims



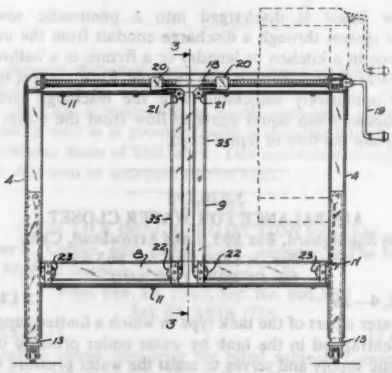
A bed having end frames with corner posts telescopingly assembled with floor engaging legs, there being separate cable elements associated with each end frame and each secured at one end to the upper portion of a leg and passing over sheaves in the end frame and secured at its other end to a takeup device on the end frame, and mechanism for actuating the takeup devices simultaneously. The takeup devices are intermediate the sides of the bed and the takeup devices at both ends of the bed are actuated by a single-operating crank projecting from the upper portion of one end of the bed. Preferably the takeup devices and mechanisms are substantially enclosed in the end frames except for a crank projecting from one end frame for manual operation.

3,628,200

HOSPITAL-TYPE BED

William J. Helton, Affton, Mo., assignor to Foster Bros. Manufacturing Company, St Louis, Mo.

Filed July 3, 1969, Ser. No. 838,787
Int. Cl. A61g 7/00; A61q 7/10
U.S. Cl. 5—64 4 Claims



A hospital-type bed including a frame with head and foot members each having tubular upright corner posts connected

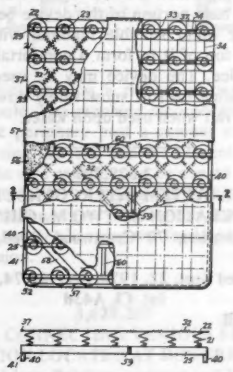
by upper and lower horizontal members of channel shape which are braced intermediate their ends by a wider upright member of channel shape. A panellike cover plate is detachably secured to each member. Each corner post is open at its lower end and telescopingly receives an upright, floor-supported leg. A single elongated threaded shaft is journaled in the upper horizontal member of each end frame and is rotatable by a crank applicable to either end of the shaft. Nuts on the shaft are slidable lengthwise of the upper horizontal member by rotation of the shaft. An individual cable is secured at one end to each nut and extends over sheaves in the frame and is secured at its other end to the upper end of a floor-supported leg. When the crank is actuated to rotate the shaft, the cables are taken up or paid out to raise or lower the end frame on the telescoping legs. A friction pawl on each leg automatically engages the associated corner post to hold the leg against dropping from the post when the leg and cable do not support the end frame.

3,628,201

BOX SPRING STRUCTURE

Daniel Krakauer, Great Neck, N.Y., assignor to Kay Manufacturing Corp., Brooklyn, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,582
Int. Cl. A47c *23/04*, *25/00*
U.S. Cl. 5—241 **7 Claims**



A combined inner spring unit and an upholstery framing unit utilizing to the utmost the load-sustaining properties of the parts and reducing to a minimum the cost and weight of the finished box spring. A number of crossbeams of greater depth than thickness each has attached to the upper edge thereof, the bottom coils of a row of cone springs about 3 to 4 inches high or about half the overall height of the finished box spring. The large top coils of the springs may be interconnected before the crossbeams are connected. Optionally, before the ends of the crossbeams are connected, an even number of inner spring units may be interdigitated and shipped with or without the upholstery framing parts, to the upholsterer. The framing parts comprise opposed side rails arranged edgewise to produce the conventional overall height of about 7 to 8 inches. The siderails connect the ends of the crossbeams and terminate adjacent the end crossbeams. Additional frame bracing is optional. A relatively stiff turn of the springs is optional to prevent bottoming.

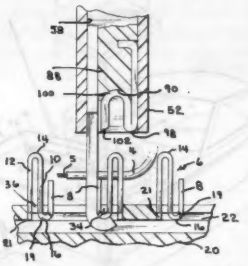
3,628,202

TOOL FOR FORMING ELECTRICAL CONNECTIONS

Christopher Kinglsey Brown, Camp Hill, William Roderick Over, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 776,383, Nov. 18, 1968, abandoned
Filed Aug. 21, 1970, Ser. No. 66,050
Int. Cl. B25f *1/04*; B25b *27/14*
U.S. Cl. 7—14.1 **12 Claims**

Tool for inserting a wire into a slot in a terminal member comprises housing having slidable plunger mounted therein. Terminal support or reaction member extends from the housing and is adapted to support the terminal on its side which is opposite to the side on which the slot is provided. By virtue



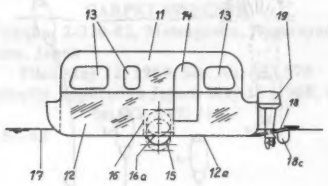
of this support member, none of the forces applied to the wire and the terminal during insertion of the wire are transmitted to the housing in which the terminal is mounted.

3,628,203

AMPHIBIAN TRAILER

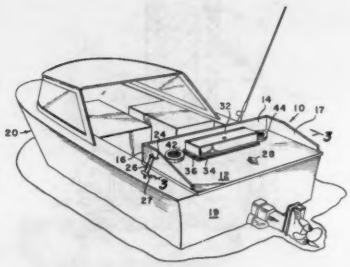
Lutz Nohse, Niels-Bohr-Ring 5, 2400 Lubeck, Germany

Filed Feb. 27, 1969, Ser. No. 802,884
Claims priority, application Germany, Mar. 2, 1968, P 15 56 829.5; Aug. 14, 1968, Germany J 18274, Aug. 16, 1968 J 18275
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **5 Claims**



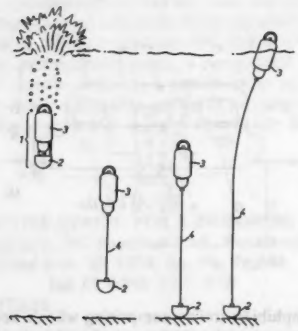
In an amphibian trailer comprising wheels each rotatably mounted on a pivotal spring arm and each individually movable out of a lower position for traveling on land into an upper position when floating on water, in which latter position the wheels are accommodated in wheel boxes forming parts of the undercarriage of the trailer to which they are connected in a watertight manner, the provision of: an adjustment arm pivotal about a common axis with the spring arm and extending angularly thereto, spring means connecting the free ends of both arms, and drive means in form of a threaded spindle and nut engaging the adjustment arm and operable from the interior of the trailer; a bifurcated tow bar adapted to be coupled to a motor vehicle and pivoted with its fork ends by clutch means to the undercarriage of the trailer lockable in any position between a lower and an upper position, the tow bar in a raised position serving simultaneously to support a platform hinged to the undercarriage; a course stabilizing plate vertically extending from the tow bar into the water when the tow bar is in its lower, substantially horizontal position; and mounting means for an outboard motor arranged at that end of the trailer which forms the stern when floating.

3,628,204
FISH DECK
Herbert J. Hoffman, Jr., 433 Bontona Ave., Fort Lauderdale, Fla.
Filed July 6, 1970, Ser. No. 52,437
Int. Cl. B63b 25/18
U.S. Cl. 9—1 10 Claims



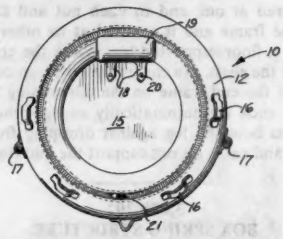
A fish deck adapted to be secured to the stern of a boat providing a surface for cleaning fish and including means for supporting fishing rods, bait pails, a fish box and a gaff.

3,628,205
OCEANOGRAPHIC SURVEY DEVICE
Bertrand Julian Starkey, and Alexander Smith Watson, both of Dartmouth, Nova Scotia, Canada, assignors to EMI Limited, Hayes, Middlesex, England
Filed Dec. 12, 1968, Ser. No. 783,382
Claims priority, application Great Britain, Jan. 31, 1968, 4,906/68
Int. Cl. B63b 21/16
U.S. Cl. 9—8 R 6 Claims



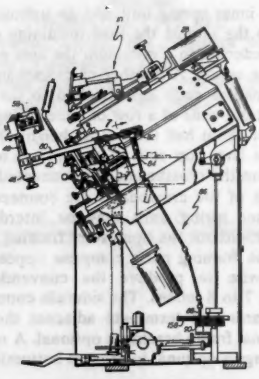
An oceanographic survey device according to the invention comprises a buoy, means for mooring the buoy at a predetermined depth to the ocean bed, instruments attached to the buoy for one or more recorders carried by the buoy for measuring one or more parameters, means for causing the buoy to move up and down in the water along a substantially vertical line, and clock means for sequentially initiating operation of the means for causing the buoy to move at regular predetermined times after the buoy is moored. Means are provided for controlling the operation of the means for causing the buoy to move so that in response to each initiation of the operation thereof the buoy moves vertically in the water from the predetermined depth to a second depth and back to the predetermined depth.

3,628,206
COMBINATION COASTER AND RAFT
John L. Mecham, 1193 E. 2nd North, Orem, Utah
Filed Nov. 21, 1967, Ser. No. 684,657
Int. Cl. B63c 9/04
U.S. Cl. 9—11 1 Claim



This device is composed of an inflated rubber innertube which forms the main body portion of the device and a bottom portion is secured to a toroidal-shaped canvas or neoprene covering which is laced together at the top area of the device, the base portion of the device being constructed of fiberglass or other suitable material with foam rubber secured to the top of it to form a comfortable seating area within the device. The device may be used as a coasting structure for riding on soft snow safely down slopes and it also serves as a raft when used upon water.

3,628,207
CONTROL SYSTEM INTERCONNECTING THE OPERATION OF TWO MACHINES
Jacob S. Kamborian, 70 Crestwood Road, West Newton, Mass.
Filed Sept. 22, 1970, Ser. No. 74,347
Int. Cl. A43d
U.S. Cl. 12—1 R 8 Claims



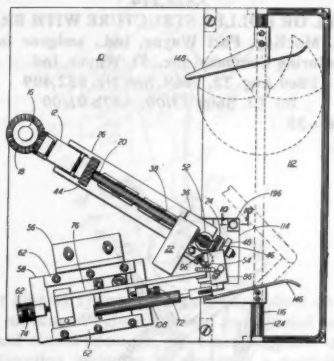
In an arrangement for first operating a toe-lasting machine to toe last a shoe and then operating a heel-lasting machine to heel last a shoe, a mechanism for shifting the position of a toe rest of the heel-lasting machine in accordance with the length of the shoe as determined by the position of engagement with the shoe of a heel clamp in the toe-lasting machine.

3,628,208

MACHINE FOR PERFORMING WORK ALONG A SELECTED PORTION OF THE PERIPHERY OF A WORKPIECE

Wladyslaw Typrowicz, and Otto M. Springer, both of Belmont, Mass., assignors to Jacob S. Kamborian, West Newton, Mass.

Filed Mar. 6, 1970, Ser. No. 17,089
Int. Cl. A43d 43/06
U.S. Cl. 12—20 56 Claims



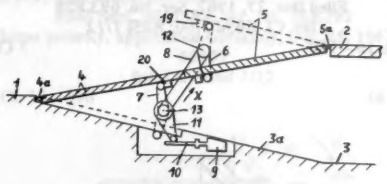
A machine for applying a ribbon of cement along the periphery of a sole. The machine incorporates a control for feeding the sole periphery past a cement extruding nozzle and for terminating the feed and the cement extrusion after the portion of the sole periphery to be coated has moved past the nozzle, a control for changing the position of the nozzle inwardly of the sole periphery during the feeding and a control for concomitantly changing the feed speed and the rate of cement extrusion.

3,628,209

DEVICE FOR CONNECTING VARIOUS FLOORS OF A CONSTRUCTION LOCATED AT DIFFERENT LEVELS

Leon G. Parent, Liege, Belgium, assignor to CIREB S.A.

Filed June 9, 1969, Ser. No. 831,670
Claims priority, application Belgium, June 12, 1969, 41789
Int. Cl. B65g 11/00
U.S. Cl. 14—71 8 Claims



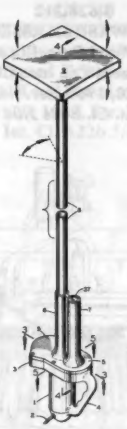
Disclosed herein is a device for connecting several superposed levels of a structure with an access surface. The device comprises at least two ramps articulated at their opposed outer extremities and positionable in one position in which they are aligned and another position in which the extremities opposite the articulated extremities are separated from one another by means of arms associated with and disposed laterally with respect to each ramp. The arms pivot in a frame at one extremity thereof under the action of a driving force; and the other extremity of each arm is provided with a roller for supporting the ramp. The pivoting movement of the arms associated with each ramp are arranged to counterbalance the movement of the other ramp.

3,628,210

ELECTRIC PLASTER-FINISHING TROWEL

Edwin Padgett, 630 S.W. 7 Avenue, Hallandale, Fla.

Filed Sept. 19, 1969, Ser. No. 859,366
Int. Cl. E04f 21/16
U.S. Cl. 15—3 2 Claims



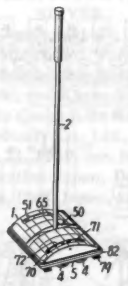
A portable electric motor driven plaster finishing device having a pair of sockets to selectively receive a shaft terminating in a troweling plate universally connected to the shaft. The device includes a transmission which will oscillate the shaft and a troweling plate when the latter is positioned in one socket and the device energized to form a first type of variegated pattern in uncured planar plaster surfaces. The transmission is also adapted to rotate the shaft and troweling plate when the shaft is placed in the second socket for forming different types of patterns on uncured planar plaster surfaces.

3,628,211

CARPET SWEEPER

Hiroshi Fukuba, 2-320-82, Matsugaoka, Nagareyama, Chiba Prefecture, Japan

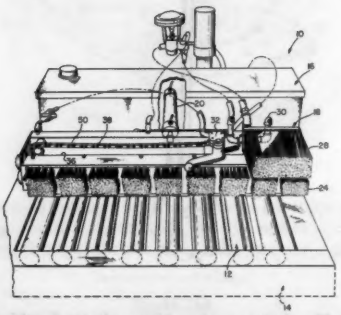
Filed May 12, 1969, Ser. No. 823,570
Claims priority, application Japan, May 15, 1968, 43/32148
Int. Cl. A47l 11/33
U.S. Cl. 15—42 2 Claims



A carpet sweeper to be moved back and forth by operating a handle is provided with a rotary cleaning brush adapted to be moved in contact with the floor by means of drive wheels on a sweeper body. The frame cover of the sweeper body is of a double-wall structure made of a thin, lightweight synthetic resin plate. The sweeper body further comprises dust receptacles covering the under portion and positioned to

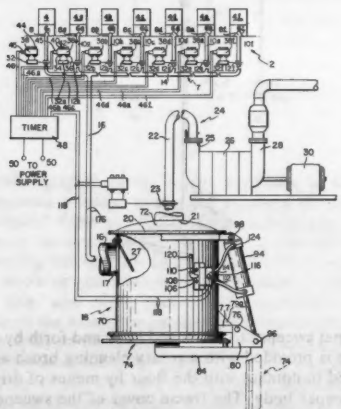
the front and rear of the rotary brush, means for elevating the drive wheels and comb members to clean the rotary brush. The operating members for opening or closing the dust receptacles and for elevating means are disposed on the upper surface of the frame cover.

3,628,212
WHEEL WASHER ASSEMBLY
Russel A. Van Brakel, Wood Dale, Ill., assignor to Haverberg Auto Laundry Equipment Co., Inc., Chicago, Ill.
Filed Aug. 20, 1969, Ser. No. 851,539
Int. Cl. B60s *3/04*
U.S. Cl. 15—21 B 4 Claims



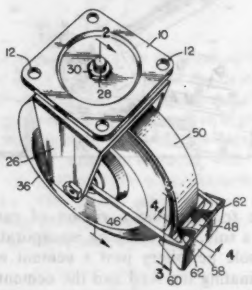
A conveyor moves a vehicle along a path through a wheel washer. A wheel of the vehicle is rotated as it is moved along the path. A lower brush, stationary in respect to the direction of the path, and an upper movable brush having elongated flexible bristles are moved into engagement with the wheel with the lower brush engaging the tire and the upper brush engaging the hub cap. The upper brush carries a spray nozzle and is moved in synchronism with the wheel by a sensing device that is engaged by the wheel. In one form the upper brush is stepped to engage the center of the hub cap and its inset edge.

3,628,213
VACUUM CLEANING APPARATUS TO REMOVE INDUSTRIAL WASTE FROM MACHINERY
Oliver H. Ramo, North Abington, Mass., assignor to Abington Textile Machinery Works, Inc., North Abington, Mass.
Filed Oct. 13, 1969, Ser. No. 870,487
Int. Cl. A47l *5/00*
U.S. Cl. 15—352 17 Claims



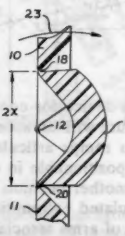
Textile vacuum cleaning apparatus for automatically providing in timed sequence repetitive, intermittent implosions of waste into a piping system having therein a waste receiving tank for collecting the imploded waste, in which the receiver tank is automatically and intermittently unloaded each time an implosion occurs without interrupting the implosions and in which waste imploded into such piping system by such implosions is collected in said receiver tank between implosions, whereby the size of the receiver tank can be substantially reduced and whereby the waste collected in the tank between implosions is not subjected to the surging action of subsequent implosions.

3,628,214
WHEEL OR ROLLER STRUCTURE WITH BRAKE
Robert H. MacKay, Fort Wayne, Ind., assignor to Lincoln Manufacturing Company, Inc., Ft. Wayne, Ind.
Filed Aug. 22, 1969, Ser. No. 852,409
Int. Cl. B60b *33/00*; A47b *91/00*
U.S. Cl. 16—35 2 Claims



The invention relates to a caster wheel or roller adapted for being mounted on an article which is to be rolled from place to place. The wheel may be provided with a selectively operable brake for locking it against rotation. A double bearing is interposed between the wheel supporting fork of the center wheel assembly and the part of the assembly that attaches to the supported article.

3,628,215
UNITARY HINGE AND SPRING MEMBER
Donald E. Everburg, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 27, 1967, Ser. No. 693,828
Int. Cl. E05d *7/00*; E05f *1/12*
U.S. Cl. 16—150 7 Claims



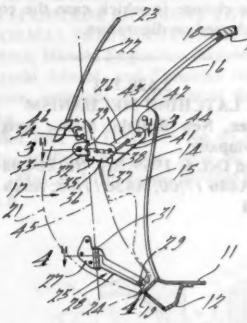
A combined hinge and spring device which may be molded of a plastic material in a single unit for use and application in a variety of products employing a spring hinge.

3,628,216

ARTICULATED DOOR HINGE

Charles L. Savell, Warren, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 1, 1970, Ser. No. 51,482
Int. Cl. E05d 3/10
U.S. Cl. 16—163 15 Claims



A door hinging system for supporting a door on a vehicle body for movement between closed and opened positions or opened and closed positions, movement in either opening or closing direction including in sequence a partially opened position at which a transfer of movement from one hinge axis to another occurs. For example, the sequence of movements in opening direction comprises a first movement about a longitudinal axis so that the door attains a partially opened outwardly tilted position relative to the vehicle body opening, the degree of outward tilt being determined by an extensible control element. Upon the proper outwardly tilted attitude being reached, upper and lower hinge pintles become axially aligned and provide a hinge axis about which the door is swingable in a conventional manner, as about a substantially vertical hinge axis, to an opened position permitting ingress to or egress from the vehicle interior.

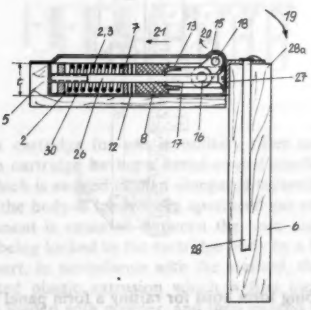
Movement from opened to closed position of the door occurs in reverse sequence.

3,628,217

HINGE FOR ARTICULATING A WALL PIVOTABLE TO AND FRO BETWEEN OPEN AND CLOSED POSITIONS

Christian Schaber, Lossburg, and Gunter Schmid, Dietersweiler, both of Germany, assignors to Messrs. Franz Hettich KG, Alpirsbach, Germany

Filed Sept. 30, 1968, Ser. No. 763,792
Claims priority, application Germany, Oct. 25, 1967, H 60597
Int. Cl. E05d 1/12
U.S. Cl. 16—190 14 Claims



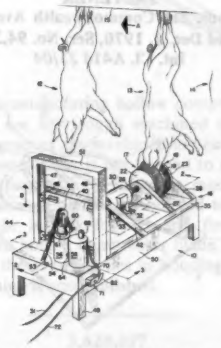
A hinge for pivoting a door or the like to a stationary member has coil springs acting in such a way on the door as to tend to hold it in open position. The springs operate on the door through a sliding block which frictionally engages the wall of the casing in which the springs are mounted so as to exert a braking effect on the movement of the door.

3,628,218

CARCASS PROCESSING MACHINE

Knud Simonsen; Soren Sondergaard, both of Islington, Ontario, and Erik Norgaard Eriksen, Malton, Ontario, all of Canada, assignors to Knud Simonsen Industries Ltd.

Filed Nov. 20, 1969, Ser. No. 878,351
Int. Cl. A22b 5/08
U.S. Cl. 17—1 9 Claims



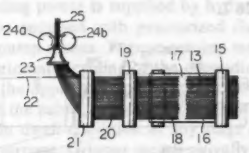
A machine for effecting a processing treatment such as a cleaning operation on each of a series of animal carcasses sequentially fed to an operating station at which such a machine is disposed comprises a carcass-treating unit and a positioning means for moving the carcass-treating unit towards and away from each animal carcass disposed at the operating station in response to dimensional characteristics of each said carcass. The machine which is especially suited for cleaning hog heads after singeing depilation usefully includes a pneumatic means containing a volume of air which is compressed to an extent dependent on the reactive force exerted by each animal carcass on the carcass-treating unit of the machine so as to permit the desired variable movement of the carcass-treating unit of that machine away from each such animal carcass.

3,628,219

METHOD AND APPARATUS FOR FORMING A COMBED SLIVER

Minoru Nakamura, Amagasaki-shi; Megumi Minamibata, Takarazuka-shi; Munetika Terao, Itami-shi; Sueo Kawabata, Nara-shi; Masateru Nishimura, Ichinomiya-shi; Toshio Kato, Gifu-shi, and Kazuo Yamada, Haguri-gun, all of Japan, assignors to Osaka Kiko Kabushiki Kaisha, Osaka and Chuwa Wool Industry Co., Ltd., Ichinomiya-shi, Japan

Filed Apr. 21, 1969, Ser. No. 817,995
Claims priority, application Japan, Dec. 13, 1968, 43/91728; Dec. 26, 1968, Japan, 43/96222
U.S. Cl. 19—231 4 Claims



A method and apparatus for forming a combed sliver having a preferable arrangement of component fibers so as to produce drafted sliver having uniform thickness of sliver. In

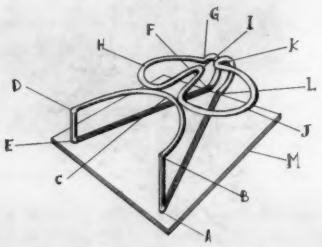
the sliver-forming step according to the present invention, each component tuft of fleece delivered from a detaching roller of a comber is provided with shear of fiber end arrangement so that leading ends of individual fibers of the component tuft are substantially arranged with uniform density with respect to an axis of sliver. The sliver-forming apparatus according to the present invention is provided with means for producing shear of fiber end arrangement so as to create uniform distribution of fiber ends in the sliver and provided with an auxiliary means for effecting positive movement of fibers during the silver-forming operation.

3,628,220

SPACE-AGE NECKTIE AND BUTTON ENGAGING FASTENER

Gaetano Alibrandi, 214 Commonwealth Ave., Boston, Mass.

Filed Dec. 2, 1970, Ser. No. 94,337
Int. Cl. A41d *25/04*
U.S. Cl. 24—56 2 Claims



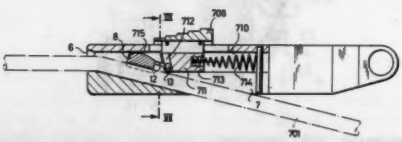
This invention concerns a necktie essentially composed by two parts of which: one is an already-made ornamental apparel, hereafter called "necktie," that can have various perimetral forms and different sections and that does not require any further manipulation, preparation or elaboration with regard to its appearance and looking; the other part composing and completing my invention is a button engaging fastener attached on the rear upper portion of the necktie for removably securing said necktie to the collar button of a wearer. Said button engaging fastener having a base portion securable to the necktie so as to lie in the plane of the necktie, a button engaging so as to lie in the plane of the necktie, a button engaging portion lying in a plane generally parallel to the plane of the necktie, and means connecting said base portion and button engaging portion, said button engaging portion being formed from wirelike material and comprising a generally heart-shaped loop defining an elongated button-straddling slot between two opposed loops and a generally C-shaped loop which abuts and closes the said button-straddling slot.

3,628,221

DEVICE FOR CLAMPING AND TIGHTENING CABLES AND THE LIKE

Max Pasbrig, Casa Luce-Via all'Eco, Orselina, Switzerland

Filed Apr. 30, 1969, Ser. No. 820,410
Claims priority, application Germany, May 2, 1968, P 12 80 369.9, July 17, 1968, July 17, 1968, July 17, 1968, May 22, 1968, Germany, Germany, Germany, Great Britain, P 17 65 781.7, P 17 65 784.0, P 17 65 782.8, 24,444/68
Int. Cl. F16g *11/00;* A44b *11/10*
U.S. Cl. 24—126 L 31 Claims



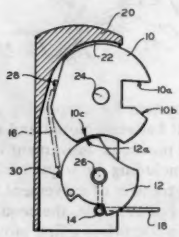
The invention relates to a device for detachably connecting, fixing and tightening connecting elements, particularly electric cables, wire ropes, chains, belts and the like. The device consists of a housing equipped with a recess with wedge-shaped clamping surfaces against which at least one spring-loaded clamping member tightens at least one associated connecting element. The connecting element passes rectilinearly through the housing and may be fitted thereinto from the side. A sleeve or bush is provided for releasing the clamping effect, is displaceable on the housing and surrounds the same wholly or partially. The clamping device may be constructed as a closure in which case the connecting element has a pan-shaped configuration.

3,628,222

LATCHING MECHANISM

Richard L. Palen, New Buffalo, Mich., assignor to Clark Equipment Company

Filed Oct. 6, 1969, Ser. No. 864,084
Int. Cl. A44b *17/00;* A43c *11/08;* A62b *35/00*
U.S. Cl. 24—201 3 Claims



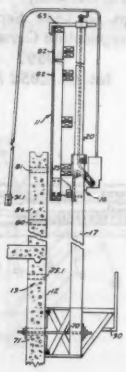
A latching mechanism having two pivotally mounted and interacting members. This mechanism provides for automatic locking when moved to the latched position with provisions for unlocking when unlatching is desired. The latching mechanism is particularly adaptable for use in latching shipping containers to the bed of transporting vehicles.

3,628,223

CLIMBING CONCRETE FORM HOIST

Alexander Babee, 325 Stratford Avenue, North Burnaby, British Columbia, Canada

Filed May 11, 1970, Ser. No. 36,087
Int. Cl. E04g *11/22*
U.S. Cl. 425/65 7 Claims



A climbing form hoist for raising a form panel progressively up a concrete wall under construction, the hoist having a telescopic mast, the mast having an upper member secured to upper and lower edges of the panel, and a lower member

releasably securable at a lower end to the wall. Means are provided to extend and retract the mast so that with the mast secured to the wall the form panel can be released from the wall and raised to a new position and with the form panel resecured to the wall the lower end of the mast can be released from the wall, raised and resecured.

3,628,224

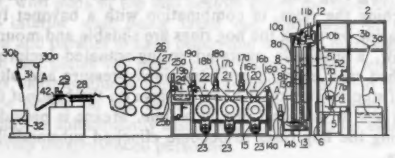
PROCESS AND APPARATUS FOR CONTINUOUSLY TREATING MANMADE FILAMENT TOWS UNDER A NORMAL PRESSURE CONDITION

Kenichi Murotani; Hiroshi Sugimoto; Hajime Sahara; Kenzo Kosaka; Kiyoshi Adachi, and Tunehiko Nakamura, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed June 18, 1970, Ser. No. 47,369

Claims priority, application Japan, June 30, 1969, 44/51093; May 20, 1970, Japan, 45/42423

U.S. Cl. 28—1.6 **27 Claims**



A process and apparatus are disclosed for continuously and uniformly wet-treating a manmade filament tow under a normal pressure condition without undesirable entanglement and excessive elongation of the filaments. The manmade filament tow is impregnated with a treating liquid, accumulated in a treating box in a square column-form, heated at a given temperature for a predetermined time period while passing through the treating box, cooled in a cooling means by passing cooling water through said tow accumulation, washed in a washing means with a washing liquid and then crimped into a desired crimped form. These processes are carried out uniformly and continuously without any disturbance of the filament tow. The process and apparatus of the present invention is valuable for obtaining the wet-treated and crimped manmade filament tow which is adequate to be subjected to draft-cutting-type tow spinning.

3,628,225

METHOD OF MAKING A MILITARY BLANK CARTRIDGE

Robert W. Parker, 668 N. Hart, Orange, Calif.

Filed July 19, 1968, Ser. No. 746,071

Int. Cl. B21d *51/54*

U.S. Cl. 29—1.3 **19 Claims**

A blank cartridge for use in military rifles and machine guns, such cartridge having a metal-coated plastic body the nose of which is swaged into an elongated tapered configuration after the body is loaded. An apertured gas-seal and metering element is mounted between the nose and the base, the latter being locked to the cartridge body by a locking and sealing insert. In accordance with the method, the body is a metal-coated plastic extrusion which is first locked to the base, then loaded with powder, and then swaged to form the elongated tapered nose portion.

3,628,226

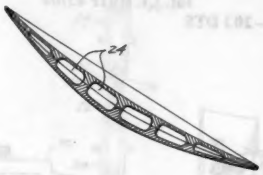
METHOD OF MAKING HOLLOW COMPRESSOR BLADES

Marvin L. Nelson, Fullerton, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Mar. 16, 1970, Ser. No. 19,897

Int. Cl. B23p *15/02, 15/04*

U.S. Cl. 29—156.8 H **3 Claims**



A method of manufacturing hollow compressor blades. A pair of forgings are first rough machined into flat blanks. Complimentary grooves are machined in one surface of each half, and the other surface is hot-formed to an airfoil shape. The grooved surface of each blank is machined to a flat plane, and the finished blanks are bonded together. Finally, the bonded blade is twist-formed and final-machined to produce a finished hollow compressor blade. A principal improvement over the prior art lies in bonding the two blanks before twist-forming is accomplished.

3,628,227

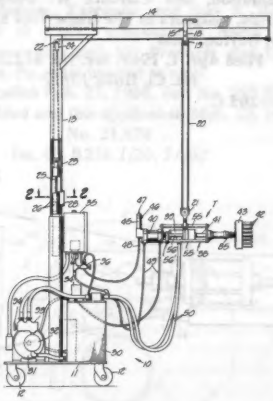
METHOD OF EXPANDING TUBES

Marvin J. Blackburn, Pasadena, and Harry L. Corwin, Los Angeles, both of Calif., assignors to Vernon Tool Co., Ltd., Alhambra, Calif.

Filed Feb. 28, 1969, Ser. No. 803,375

Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*

U.S. Cl. 29—157.4 **9 Claims**

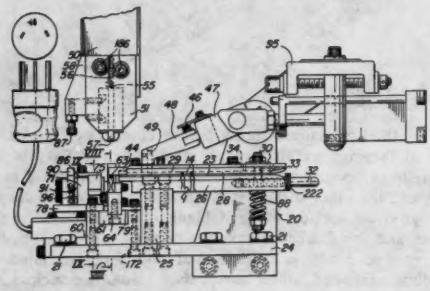


A tube expander apparatus and method for expanding heat-exchange tubing into pressure assembly with a header bore. Expanding power is supplied by hydraulically powered motive means supplied with pressurized fluid from electrically driven pump means. Torque-sensing means is employed to arm the automatic cycling of the expanding operation and to condition the apparatus for restoration to starting position at the end of the tube-expanding cycle. The expansion cycle can be held in dwell condition at any stage at the user's option for any purpose. Gripper means swivelly mounted on the expander is effective to hold the tube against rotation during initial stages of the cycle should this be desirable.

3,628,228
APPARATUS FOR CRIMPING ELECTRICAL CONNECTORS TO WIRES

Lodevicus Lambertus Johannes van de Kerkhof, 's-Hertogenbosch, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 9, 1970, Ser. No. 17,411
Claims priority, application Netherlands, Mar. 28, 1969, 69.04810
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DTS 5 Claims

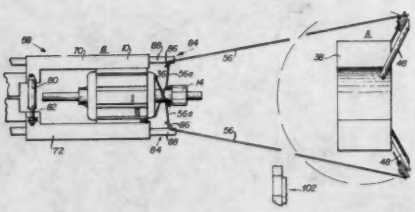


A method of and apparatus for crimping a ferrule part of an electrical connector to a wire end is disclosed for use with connectors wherein a portion of the contact part of the connector extends beyond the base of the U-section ferrule part in the opposite direction to that in which the U-arms of the ferrule part extend.

3,628,229
AUTOMATIC ARMATURE WINDING MACHINE

John M. Biddison, and Clarence W. Donnaker, both of Dayton, Ohio, assignors to The Globe Tool and Engineering Company, Dayton, Ohio

Filed Apr. 1, 1969, Ser. No. 812,258
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 C 11 Claims

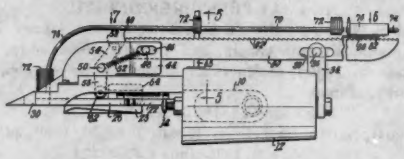


In the automatic winding of armatures, the last lead wire from a coil wound in an armature is looped about an appropriate commutator tang and the wire portion connected between the newly wound armature and an unwound armature is cut closely adjacent the aforementioned commutator tang. Also disclosed is a double-flier apparatus for winding armatures, wirecutting assemblies, and a transfer mechanism adapted to hold the connecting wire portions in a position where they may be cut closely adjacent the tangs about which the wires are looped. In one embodiment the commutator tangs are collapsed at the time the connecting wire portions are cut.

3,628,230
HOG RING GUN

Frederick G. J. Grise, West Brookfield, Mass., assignor to Novelty Tool Company, Inc., Spencer, Mass.

Filed Jan. 15, 1970, Ser. No. 3,042
Int. Cl. B23q *7/10*; B23p *11/00*
U.S. Cl. 29—212 D 13 Claims

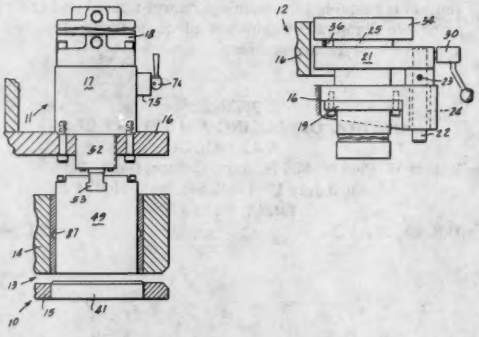


A hog ring gun including usual means for ejecting and clinching the rings, in combination with a bayonet type of magazine on which the hog rings are slidable and mounted in a row, a manually operated spring-actuated reciprocating toothed rack exerting predetermined pressure and alternate relief step by step on the row of rings on the bayonet to feed the rings to the anvil one at a time. Means is provided for causing the hog rings to become clinched substantially in a circle.

3,628,231
MACHINE TOOL HAVING TOOL LOADER AND UNLOADER

James J. Pancook, Tonawanda, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,370
Int. Cl. B23p *19/04*
U.S. Cl. 29—243 27 Claims



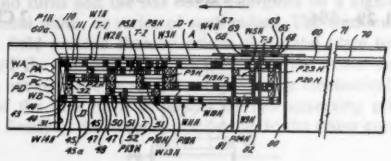
A machine tool has a tool loader and unloader for inserting and ejecting tooling into the movable tool station of a machine tool remotely from its work station, for example into the turret of a punch press. A fluid actuator operates raising and lowering means that include concentric tool support surfaces piloted against rotation and having nests for receiving tooling of various sizes, one of such nests being rotatable for angularly positioning shaped tooling. Coacting therewith is tool ejection means that employs a single fluid actuator for reciprocating a tooling support plunger and a tooling ejecting plunger, there being a driving connection between the plungers enabling relative reciprocation thereof.

3,628,232

WALL PANEL LAYOUT METHOD

Lloyd E. Brewer, 7903 Katy Road, Houston, Tex.

Filed Aug. 8, 1969, Ser. No. 848,634
Int. Cl. B23q 17/00
U.S. Cl. 29—407 4 Claims



A wall panel layout method wherein the bottom and top plates for all of the wall panels of a building are layed out and marked in accordance with a floor plan drawing of a building, with pairs of top and bottom plates for each exterior and interior wall being layed out lengthwise in one direction and parallel to each other, and with the markings of studs on the plates for intersecting walls, corners, window openings, door openings and the like being related to fixed reference points on the floor plan drawing, whereby wall panels may be subsequently assembled rapidly and accurately by relatively inexperienced personnel.

3,628,233

METHOD FOR THE LOW-TEMPERATURE JOINING OF CARBIDES

John J. Sowko, Sr., Bethel Park, Pa., assignor to Carmet Company, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,697
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 4 Claims

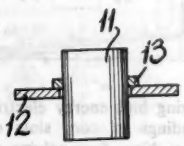
Described herein is a method of joining metal carbides from the group consisting of tungsten carbide, tantalum carbide and titanium carbide which permits the use of low-silver, alloy solder at brazing temperatures under about 800° F.

3,628,234

CONNECTION OF METALS TO CERAMICS

Edward Alan Russell, Pontypool, Wales, assignor to Joseph Lucas Industries Limited, Birmington, England

Filed Sept. 22, 1969, Ser. No. 859,812
Claims priority, application Great Britain, Sept. 30, 1968, 46,262/68
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 2 Claims



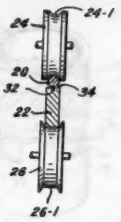
In the connection of a ceramic post to a metal plate, the post is located in a hole in the plate with a porous ring of brazing alloy surrounding the post in contact with the plate. The brazing alloy is then heated to braze the ring to the plate, and the invention resides in the provision of a ring of brazing alloy which has such an initial porosity that when the ring is heated to the brazing temperature the ring sinters to have less porosity and expands less than the post and so will be a tight fit on the post.

3,628,235

METHOD OF MAKING EDGELAY MATERIAL

Joseph A. Willoughby, Attleboro, Mass., and Brian R. Ruark, Kettering, Ohio, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1969, Ser. No. 836,562
Int. Cl. B23k 31/02
U.S. Cl. 29—480 5 Claims



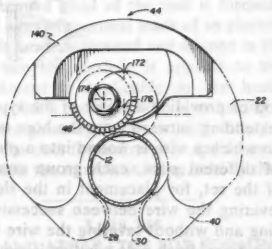
A novel composite edgelay material has a thin strip of a first metal secured to an edge of a strip of another base metal. The thin metal strip extends along the edge of the base metal strip as an edgelay and is preferably coextensive with the edge surface of the base metal strip. However, the edgelay strip is secured to the base metal edge surface only along a thin stripe which is of a width less than the width of the base metal edge surface. This novel composite material is made in a novel method in which a metal wire or rod is disposed with a thin stripe extending along the wire or rod periphery in engagement with the edge surface of the base metal strip. The wire or rod is then resistance welded to the base metal edge and, preferably, is deformed to a different cross-sectional configuration such as a rectangular cross-sectional configuration coextensive with the base metal strip edge surface.

3,628,236

TUBE JOINING METHOD AND MEANS

Roderick G. Rohrberg, Torrance, and Don E. Harvey, Inglewood, both of Calif., assignors to North American Rockwell Corporation and Air Products and Chemicals, Inc., Allentown, Pa., part interest to each

Original application Feb. 23, 1968, Ser. No. 707,819, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 21,674
Int. Cl. B23k 1/20, 31/02
U.S. Cl. 29—482 1 Claim



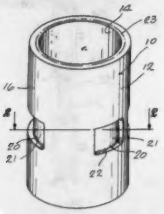
A portable carriage adapted to be mounted on a tubular workpiece is used to perform cutting operations followed by in place welding operations on such workpiece using two subassemblies interchangeably mounted on the carriage, one for cutting and one for welding. The carriage is rotatable around the stationary workpiece or may be held stationary while the workpiece rotates. After preliminary trimming, fusion welding is progressively accomplished in a circular path to join the abutting ends of the workpiece components.

3,628,237

METHOD OF CONSTRUCTING AN ENGINE WITH A PREFABRICATED CYLINDER LINER

Kurt F. Ziegler, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 23, 1969, Ser. No. 887,518
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 29—527.6 3 Claims



Disclosed herein is a method of constructing an engine having a cast iron cylinder liner and in which the engine block is die cast around the cylinder liner. The cylinder liner is cast with blind ports or recesses on the exterior surfaces. The outside and inside of the liner are machined to make the surfaces concentric, and the engine block is die cast around the liner by using a two-piece die with fingers which extend into the blind ports to prevent entry of the metal therein.

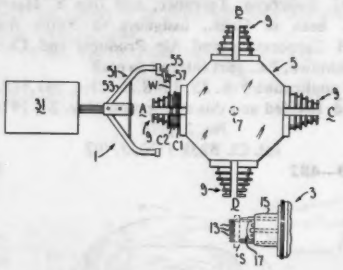
The recesses are opened after the block is die cast by further machining of the inside surface of the liner.

3,628,238

METHOD OF MANUFACTURING WOUND STATORS

Donald E. Hill, 522 Sandy Ann Lane, Fort Wayne, Ind.

Original application May 19, 1966, Ser. No. 551,328, now Patent No. 3,508,316, dated Apr. 28, 1970. Divided and this application June 26, 1969, Ser. No. 870,857
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 1 Claim



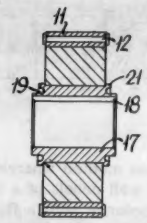
A method of providing a stator of the type having a bore and slots extending outward from the bore with a set of pole windings in which a wire is wound into a plurality of groups of coils of different sizes, each group constituting a pole winding of the set, for placement in the slots of the stator without severing the wire between successive coils of each pole winding and without severing the wire between successive pole windings. Each pole winding is wound at a winding station and moved, following completion of its winding, to an unloading position. Each pole winding of a set of pole windings, after movement to the unloading position, is transferred to a means located adjacent the unloading position for placing the set of pole windings in the slots of the stator without severing the wire between the successive pole windings of the set. The wire between the last pole winding of said set and the first pole winding of the next successive set is severed. A stator is placed on the placing means, and the latter is operated to place entire set of pole windings in the slots of the stator in a single operation.

3,628,239

METHOD OF MAKING DYNAMO MACHINES

John William Archibald Hunt, Northfield, and Bernard Alan Potter, Kings Heath, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 4, 1969, Ser. No. 796,324
Claims priority, application Great Britain, Feb. 9, 1968, 6,463/68
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 2 Claims



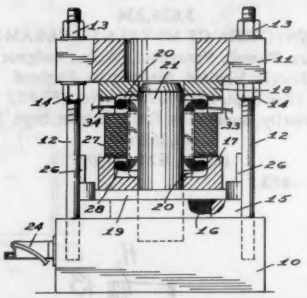
A method of manufacturing a permanent magnet rotor including the steps of positioning a plurality of permanent magnets between a central polygonal core and an outer pole assembly so that the magnets are in contact with both the pole assembly and respective faces of the core, then deforming at least one axial end of the core to prevent relative axial movement between the core and the magnets, encapsulating the unit thus formed, and then removing portions of the pole assembly to separate the poles.

3,628,240

METHOD AND APPARATUS FOR TREATING MAGNETIC CORES AND WINDINGS

Norman A. Bender, Fort Wayne, Ind., assignor to General Electric Company

Filed Feb. 28, 1969, Ser. No. 803,395
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 11 Claims



A device utilizing high-energy electrical pulses for positioning coil windings in core slots of the stator of a dynamoelectric machine, for applying mechanical force to position the end turns of such windings, and for pounding stator cores to reduce core loss comprises a top and bottom plate positioned by tie rods which have nuts for adjusting the separation distance of the plates, a flat coil winding overlying the bottom plate, and a metal plate overlying the flat coil. When the device is used to pound stator cores a stator is placed on the metal plate and a high-energy electric pulse is sent through the flat coil. This creates a strong transient magnetic field which causes the metal plate to snap the stator against the top plate of the device. When the device is used

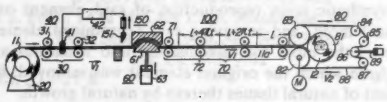
to position coil windings in the stator, forming blocks having annular grooves to fit the end turns of stator coils are positioned on the metal plate and top plate and a stator with loose coil windings placed therebetween. The coil windings themselves are then subjected to a high-energy pulse, or series of such pulses. This compacts the windings within the stator core slots and draws the end turns down toward the stator core. The forming blocks are then positioned against the end turns and the flat coil is energized by a high-energy electrical pulse, or series of such pulses. The transient magnetic field created thereby causes the metal plate to move toward the top plate thereby squeezing the stator and end turns between the two forming blocks. The mechanical working of the end turns produced by this squeezing positions them firmly in the desired relationship to the stator core.

3,628,241

METHOD OF MAKING A WOUND CORE AND APPARATUS THEREFOR

Kozo Toyoda, Hitachi, and Katutosi Akatu, Iwaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 28, 1970, Ser. No. 32,634
Claims priority, application Japan, May 2, 1969, 44/33611
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **12 Claims**



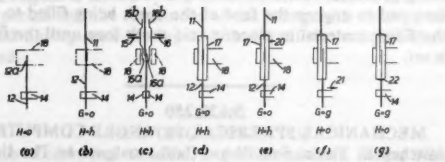
A magnetic steel strip is continuously fed into a cutting device which cuts the steel strip into a prescribed length. The cutting device is operated in response to a first metering device which meters the length of the magnetic steel strip to be cut, and cuts the steel strip into the prescribed length successively utilizing a compulsory hump forming device disposed at the feed-out side of the cutting device without stopping the feed of the magnetic steel strip. The cut magnetic steel strips are transferred to a feed-out device and further to a continuous winding device. By the winding device the cut magnetic steel strips are wound into a wound core in which the seam positions are overlapped by a prescribed length.

3,628,242

MANUFACTURE OF ELECTRIC SWITCHES

Peter M. Zollman, Weybridge, England, assignor to Badalex Limited

Filed Mar. 27, 1969, Ser. No. 811,033
Int. Cl. H01h *11/00;* **G01r** *4/00*
U.S. Cl. 29—622 **5 Claims**



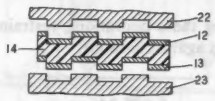
The invention concerns a method for assembling reed contact units. In assembling such units, one reed is positively held and the second is magnetically held from the first and is aligned with it while so held. A fusible element is sealed to both reeds, the sealing being completed, and the reeds held positively, after the reeds have been displaced relatively through a distance corresponding to the desired gap between the reeds in the finished contact unit.

3,628,243

FABRICATION OF PRINTED CIRCUIT

Karl-Heinz Phol, Boulder, Colo.; Arthur T. Spencer, New Providence, and Robert F. Westover, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 14, 1969, Ser. No. 876,830
Int. Cl. B41m *3/08;* **H05k** *3/00*
U.S. Cl. 29—625 **7 Claims**



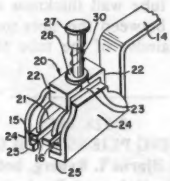
A printed circuit is produced upon a structure including at least one sheet of metal bonded to a sheet of thermoplastic material by shearing off and displacing into the thermoplastic material that portion of the metal sheet which does not constitute part of the printed circuit pattern, thereby leaving on the surface of the thermoplastic material that portion of the metal sheet which constitutes the printed circuit.

3,628,244

METHOD AND TOOL FOR ASSEMBLING LEADS INTO CIRCUIT BOARD APERTURES

William M. Halstead, P.O. Box 881, Glen Burnie, Md.

Filed Feb. 19, 1970, Ser. No. 12,673
Int. Cl. H05k *3/30, 13/04*
U.S. Cl. 29—626 **11 Claims**



A handle-equipped head of the tool is formed with open slots to receive rows of terminal leads of an electrical module so that the leads are straightened and aligned in the direction of the slots when the module is applied to the head. A separate attachment is applicable to the head with the module thereon and is provided with jaws having notches for receiving and straightening the leads so that they are aligned transversely of the slots for insertion in apertures of a printed circuit board while the module is being held by the tool.

3,628,245

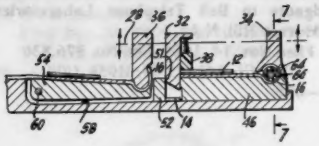
METHOD AND APPARATUS FOR FORMING AND APPLYING TERMINALS

Constantine George Mates, Elmhurst, and Herbert G. Burkert, Crystal Lake, both of Ill., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 21, 1969, Ser. No. 878,714
Int. Cl. H01r *43/04*
U.S. Cl. 29—628 **8 Claims**

A method and apparatus for sequentially preforming and applying electrical terminals includes a cutting, bending and crimping die set assembly which receives a substantially flat, precut strip stock and simultaneously crimps a terminal to a

lead wire, cuts this terminal free from the strip stock, preforms the wire grip elements of the next succeeding strip



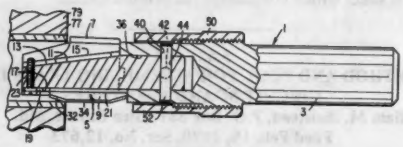
terminal, and, during these operations, restrains the free terminal being crimped against motions.

3,628,246

APPARATUS FOR TUBE REMOVAL

William B. Bronne, and Harley E. Linthicum, both of Springfield, Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 6, 1968, Ser. No. 757,963
Int. Cl. B23d *21/06*; B26b *27/00*; B26d *3/16*
U.S. Cl. 30—92.5 **8 Claims**



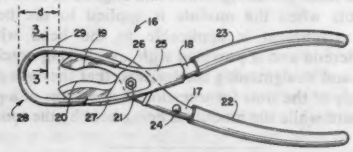
A method and apparatus for relieving the hoop stresses securing a tube in a tube sheet to allow removal of the tube therefrom, the hoop stresses being relieved by removing material from the tube to form two axial slots having a radial depth less than the tube wall thickness and depressing the portion of the tube between the slots to break the portion loose from the remainder of the tube to relieve the hoop stresses therein.

3,628,247

CABLE-CUTTING PLIERS WITH GUIDE LOOP

Leroy E. Lattin, and Bjarne I. Byberg, both of San Fernando, Calif., assignors to Universal Products Corporation, San Fernando, Calif.

Filed Feb. 20, 1970, Ser. No. 13,055
Int. Cl. B26b *13/00*
U.S. Cl. 30—233 **2 Claims**



A cable-cutting pliers is provided with a closed guide loop secured to the pliers through which may be passed the cut end of a specific cable to be removed from among a plurality of cables. After an initial cut is made at the terminal point on the frame where the cable can be positively identified, the cut cable is held captive to the pliers and yet the pliers may be moved along the cable and the cable rack towards the other end so that the dead cable may be lifted and cut at various points along the route with the assurance that it is the same cable initially cut. Several such cuts ordinarily will be required due to the length of the cable rack, the interference of other cables and the construction of the rack itself.

3,628,248

PROCESS FOR FORMING ARTIFICIAL IMPLANTS

Ernest A. Kroder, Hellam, Pa., and John F. Glenn, Milford, Del., assignors to Dentsply International Inc., York, Pa.

Filed July 22, 1969, Ser. No. 843,336
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **9 Claims**

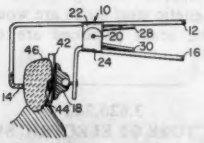
Process for forming artificial implants for replacement of vertebrate animal hard tissue elements and parts thereof and formed from synthetic resin, without preparation prior to surgery. The process includes removal of the animal tissue element or part to be replaced, investing it in quick-setting elastomeric material to form a mold cavity of the same, forming a synthetic resin reproduction of said element or part from said mold, and removing said reproduced element or part from the mold for introduction into a natural animal body, from which the original element was removed, for attachment of natural tissues thereto by natural growth.

3,628,249

DENTAL CLAMP

Loel R. Wurl, 2113 Woodland Drive, Haperville, Ga.

Filed July 25, 1969, Ser. No. 844,882
Int. Cl. A61c *5/12*
U.S. Cl. 32—63 **5 Claims**



A dental clamp that includes a pair of resiliently biased members adapted to grip a tooth therebetween wherein one of said members is shaped generally to conform to the contour of the face of a tooth and the other of said members being provided with a universally mounted or swiveled pressure pad to engage the face of the tooth being filled to hold the filling material in place in said tooth face until the filling is set.

3,628,250

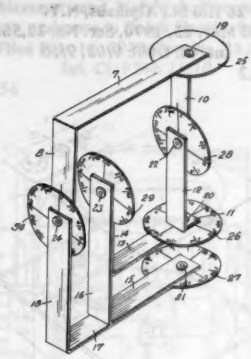
MECHANICAL SPHERICAL TRIANGLE COMPUTER

Mitchell E. Timin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed Oct. 16, 1969, Int. Cl. B43l *13/20* Ser. No. 866,927
U.S. Cl. 33—1 SA **4 Claims**

Instruments for use in solving basic problems of mathematics in navigation are generally complicated and expensive. The present invention teaches a simple instrument for the purpose comprising six L-shaped members, pivoted together with a protractor at each pivot, to indicate the angle

between the adjacent legs. The extended axes of the pivot members intersect at a common point, the center of a sphere.



The protractors and indicia marks on the L-shaped members indicate the angles sought of the spherical triangle involved.

3,628,251

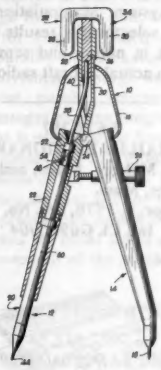
ROTATING PENCIL-COMPASS

Erich J. Feldl, 1422 McCain Lane, Manhattan, Kans.

Filed Sept. 16, 1970, Ser. No. 72,580

Int. Cl. B43l *9/02*

U.S. Cl. 33—27 B **9 Claims**



One leg of a compass has a pencil which is rotatable about its longitudinal axis relative to the remainder of the compass. A yoke at the top of the compass is rotatable relative to the finger knob of the compass is operably coupled with the pencil and is adapted to be manually held against rotation while the compass is turned by the knob. Relative rotation between the pencil and the remainder of the compass is thereby effected during such turning and the pencil tip remains sharpened.

3,628,252

DRAFTING APPARATUS

Jurgen Muller, Bad Hersfeld, and Winfried Lotz, Sorga, both of Germany, assignors to Zuse K G, Bad Hersfeld, Germany

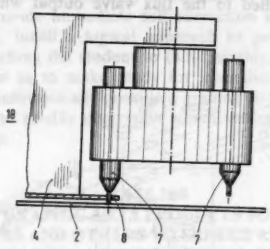
Filed July 11, 1969, Ser. No. 841,067

Claims priority, application Germany, Oct. 4, 1968, P 18 01 024.7

Int. Cl. B43l *13/02*

U.S. Cl. 33—32 C **10 Claims**

A drafting apparatus comprises a support mounted for predetermined movement above and with reference to a paper on which drafting is to take place. A plurality of drafting pens are provided each of which has a line-forming contact portion of different width, and which all have identical shaft portions each connected to and extending rearwardly



from one of the contact portions. Shaft-holding means is provided on the support and serves to engage the shafts of respective ones of the drafting pens for maintaining the same in predetermined orientation with reference to the support and to the paper.

ERRATUM

For Class 33—143 see:
Patent No. 3,629,639

3,628,253

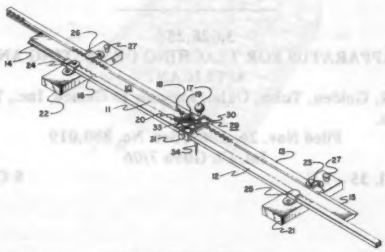
EXTENSIBLE CONSTRUCTION MARKER

Wallace D. Shepard, 10 N. Williams St., Kennewick, Wash.

Filed Feb. 18, 1970, Ser. No. 12,405

Int. Cl. B25d *5/00*

U.S. Cl. 33—189 **3 Claims**



The marker includes a pair of grooved slides each having a rack rectilinearly disposed along one of the respective terminal edges thereof slidably engaged with respective tongue portions of the body of the marker. A pair of pinion gears engaging respective racks of the slide members are journaled for rotation in the body. The pinion gears also engage a gear carried by a crank rotatably mounted in the body, the crank and gears being operable to simultaneously move the slide members in opposite directions. Each of the slide members are provided with marking means mounted at the respective outermost opposite terminal ends of each of the slide members.

3,628,254

NONPENDULOUS FLUX VALVE COMPASS SYSTEM

William W. Burmeister, Phoenix, Ariz., assignor to Sperry Rand Corporation

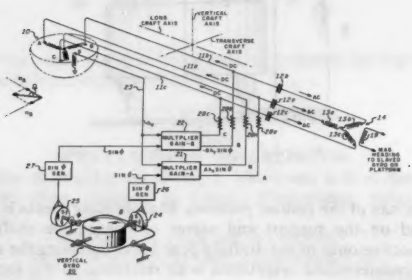
Filed Apr. 1, 1970, Ser. No. 24,576

Int. Cl. G01c *17/38*

U.S. Cl. 33—225 **14 Claims**

A magnetic compass system utilizing a strapped-down, Y-configured flux valve in combination with an orthogonally

disposed sensor responsive to magnetic field components oriented normal to the plane of the flux valve windings. Multiplier circuits coupled to the orthogonal sensor modify its output signal in accordance with pitch and roll attitude of the flux valve to produce respective DC compensation signals which are applied to the flux valve output windings in a



manner to generate magnetic fields thereabout for cancelling vertical field components aligned with the valve as a consequence of the pitching and rolling motion. The output windings of the flux valve are coupled in conventional fashion to a synchro-type receiver mechanism for driving the compass indicator.

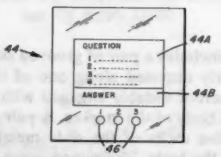
ERRATUM

For Class 34—56 see:
Patent No. 3,628,258

3,628,255
APPARATUS FOR TEACHING OR TESTING AN APPLICANT

John R. Golden, Tulsa, Okla., assignor to Gemco, Inc., Tulsa, Okla.

Filed Nov. 26, 1969, Ser. No. 880,019
Int. Cl. G09b 7/06
U.S. Cl. 35—9 E **8 Claims**

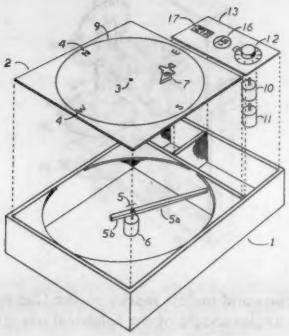


This invention relates to an apparatus for teaching or testing an applicant. More particularly, the invention relates to an apparatus for teaching or testing an applicant including a rear lighted screen for viewing by the applicant, a projector for projecting a slide onto the rearward side of the screen, the projector including means for projecting an image displaying a question section in the upper portion of the screen and an answer section on the lower portion of the screen, a shield supported adjacent the screen and pivotally positionable between a first and second position, the first position of the shield obstructing the answer portion and the second position allowing the answer portion to be displayed on the screen, and means of pivoting the shield between the first and second position at appropriate times. A further embodiment includes means of automatically advancing the projector in random automatic unpredictable sequence.

3,628,256
AIRCRAFT NAVIGATION TEACHING DEVICE

Roger W. Story, 26 Hill St., Alplhaus, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,551
Int. Cl. G09b 9/08, 9/16
U.S. Cl. 35—10.2 **2 Claims**

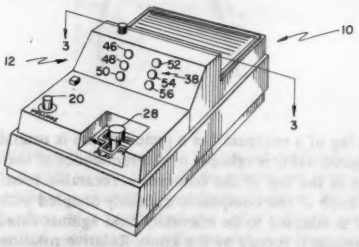


A device for demonstrating and teaching the principles of aircraft radio navigation with reference to an omnirange station in which movement of a model aircraft on a surface representing the geographical area around an omnirange station is followed by a position sensing system. The position sensing system incorporates a course selector dial and indicators similar to those generally provided in an aircraft omnirange navigation system. Manipulation of the model aircraft and the course selector dial results in indicator displays which are consistent in nature and sense with those which would be observed in actual aircraft radio navigation.

3,628,257
BRAILLE DICTIONARY

Charles R. Budrose, Melrose, Mass., assignor to Bio-Dynamics, Inc., Cambridge, Mass.

Filed Apr. 9, 1970, Ser. No. 26,949
Int. Cl. G09b 5/04
U.S. Cl. 35—35 A **10 Claims**



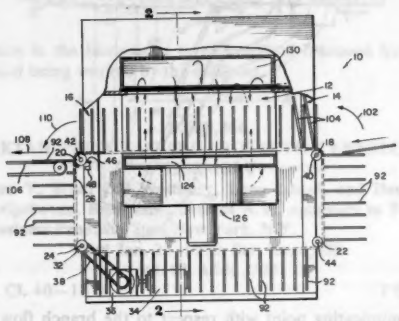
An electromechanical apparatus adapted for interconnection with a cassette communicative mechanism in place of the cassette is provided for audio presentation of selected braille symbol definitions. The apparatus includes a length of magnetic tape having representations of audio reproducible braille symbol definitions, a switch matrix in a braille cell configuration, a brake for stopping the magnetic tape at a desired location and a memory logic circuit for receiving input signals from the switch matrix and selectively controlling the brake. Initially, the magnetic tape is advanced rapidly in search for the braille symbol representation entered into the memory from the switch matrix. Once the braille symbol representation is located, a signal generated by the memory logic circuit actuates the brake. Thereafter, the mechanism is placed in the PLAY position and the definition of the selected braille symbol is presented as an audio signal for aural perception.

3,628,258

HEAT TUNNEL FOR SHRINKING PLASTIC JACKETS

Alfred H. Schlemmer, and Melvin A. Pearson, both of Indianapolis, Ind., assignors to Ralph Hamill, Indianapolis, Ind.

Filed Feb. 16, 1970, Ser. No. 11,724
Int. Cl. F26b *13/10*
U.S. Cl. 34—56 14 Claims



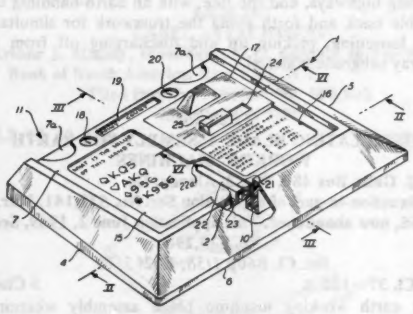
An apparatus for heat shrinking plastic covers or jackets on planar-shaped articles, such as record albums, comprising an elongated tunnel having an entry end and an exit end and means for serially conveying such articles longitudinally through the tunnel. The conveying means includes endless means arranged to provide at least one run thereof extending longitudinally through the tunnel and, at spaced-apart points therealong, means for engaging such articles and holding them in generally parallel planes extending transversely to their direction of movement through the tunnel. The spaces between the adjacent, parallel articles define a series of generally parallel passages moving longitudinally through the tunnel. Blower means is provided for forcing heated air transversely through the tunnel and in a direction generally parallel to the parallel planes of the articles. The endless means is driven in a step-by-step manner and the means for driving the endless means is controlled by switch means which may be dominated or operated by other apparatus which feeds the articles or by the movement of the articles into the entry end of the tunnel.

3,628,259

SELF-EDUCATIONAL DEVICE

Herbert Kahn, 151 Legion Place, Malverne, N.Y.

Filed May 28, 1969, Ser. No. 828,471
Int. Cl. G09b *3/00*
U.S. Cl. 35—9 E 17 Claims



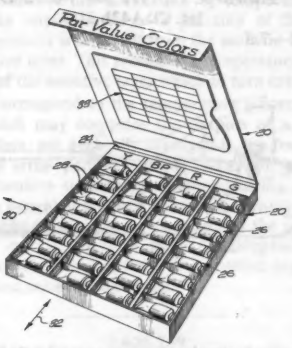
A self-educational device adapted to provide a programmed plan of instruction for teaching bidding in the game of contract bridge, said device being adapted to hold a plurality of cards representing a set to be studied. The device includes means for allowing incremental, selective and progressive exposure and study of data on said cards so as to firstly, incrementally provide a student with text material, secondly, present the student with the problems in an increasing order of complexity, thirdly, selectively present rationale to solutions so as to require restudy in the case of a wrong answer, fourthly, provide immediate self correction without distraction, fifthly, instill a logical approach to problem solution thereby teaching the student to think, sixthly, allow filing of the cards so as to make ready for immediate restudy, and seventhly, automatically provide a grading so that an instructor is able to readily determine which students are most in need of help.

3,628,260

FINE AND GRAPHIC ARTS PRODUCTS FOR ENABLING AMATEURS AND OTHERS TO SELECT AND UTILIZE COLOR MATERIALS WITH OPTICAL RESULTS OF INCREASED PREDICTABILITY

Nathaniel J. Jacobson, 7 Harvard St., Brookline, Mass.

Continuation of application Ser. No. 694,736, Dec. 29, 1967, now abandoned. This application Oct. 6, 1970, Ser. No. 78,644
Int. Cl. G09b *11/00*
U.S. Cl. 35—28.5 2 Claims



A limited number of predetermined, systematically identified color materials are predeterminedly arranged in an array of distinguishable groups of colors of like "value," with reference to the terms "hue," "value" and "chroma" as used in the "Munsel, Color System" (or with reference to equivalent terms as used in analogous systems). The user, in working with the array, efficaciously is enabled to create a particular color of predicted optical character by mixing given colors from a particular group of premixed colors of like "value."

3,628,261

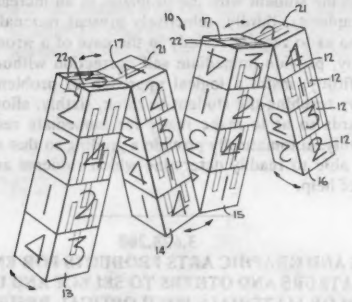
EDUCATIONAL TOY DEVICE

Robert I. Thompson, 7444 St. Charles Ave. Apt. 3F, New Orleans, La.

Filed Feb. 3, 1970, Ser. No. 8,183
Int. Cl. A63h *33/04*
U.S. Cl. 35—70 4 Claims

An educational toy device comprising multiple groups of cubes wherein each group is interconnected by means of a double hinge and each cube in each group is also connected by means of a double hinge thereby permitting any number of cube combinations for forming various configurations. Each of the cubes in each group is provided with a selected

numeral on each of its six faces in a manner whereby the numerical sum on the faces of at least any pair of cubes adjacent another pair along a common line of symmetry is the same regardless of the various cube combinations.

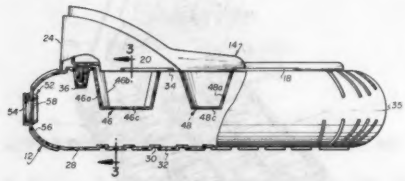


3,628,262

CUSHION ATTACHMENT FOR SHOES

Benjamin Stopek, West Hempstead, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,097
Int. Cl. A43b *3/10*
U.S. Cl. 36—7.5 **10 Claims**



Low gravity is simulated in toy space boots by provision of a cushion attachment for a shoe that includes a reservoir that gives way slowly as the weight of the wearer is placed thereon so that a sinking sensation is produced with each step of the wearer. The cushion attachment is provided with a leveling feature so that the foot of the wearer is substantially level at the end of a step although the wearer has a normal "heel and toe" stride. The maximum collapse of the reservoir is controlled by internal means. Sound effects associated with the steps of the user are produced by further means incorporated in the attachment.

3,628,263

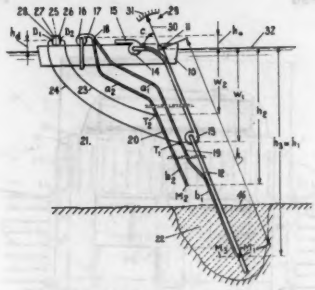
PRESSURE DIFFERENTIAL MEASURING MEANS FOR SUCTION DREDGING INSTRUMENTS

Romke van der Veen, Jutphaas, Netherlands, assignor to N. V. Ingenieursbureau Voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands

Filed July 2, 1969, Ser. No. 838,712
Claims priority, application Netherlands, July 15, 1968, 68.09986
Int. Cl. E02f *3/88*
U.S. Cl. 37—58 **4 Claims**

A pressure differential measuring device is located on board a dredging vessel. The water-filled lines transmitting to the measuring device communicate with branches of a purgative water system at points located sufficiently higher than the discharge points of the branches that the pressures at such communication points never falls below the value of the vapor pressure of the water, thus allowing the onboard placement of the measuring device.

Also, the communicating points are so located that the ratio of the branch flow pressure loss in one branch at its



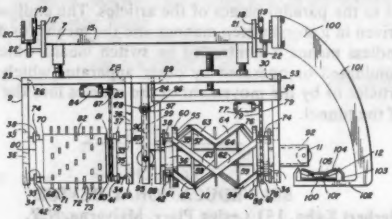
communicating point with respect to the branch flow pressure loss at its discharge point is equal to the ratio of these values in the other branch. In this way, the measured pressure differential is independent of the purgative pump output.

3,628,264

EARTH-MOVING MACHINES FOR SUBGRADING HIGHWAYS

Murray A. Rowe, Canton, S. Dak., assignor to K & R Industries Inc., Canton, S. Dak.

Filed Oct. 13, 1969, Ser. No. 865,674
Int. Cl. E02f *5/00*
U.S. Cl. 37—108 R **6 Claims**



Earth-moving machine embodying a trusswork for spanning highways, and the like, with an earth-handling unit movable back and forth along the trusswork for simultaneously loosening, picking up and discharging off from the highway subgrade material.

3,628,265

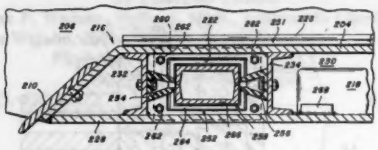
OSCILLATING BLADE ASSEMBLY FOR EARTH WORKING MACHINES

Alex J. Galis, Box 480, Rte. 3, Albany, Ga.

Continuation-in-part of application Ser. No. 532,141, Mar. 7, 1966, now abandoned. This application June 2, 1969, Ser. No. 829,296
Int. Cl. B60p *1/58*; E02f *3/76*
U.S. Cl. 37—126 A **5 Claims**

An earth working machine blade assembly wherein a separate blade edge is movably mounted on the blade body and is connected to an eccentric weight-type oscillating device. Resilient means are mounted on the machine and connected to the oscillating device to both augment the force exerted by the oscillating device on the blade edge and ab-

sorb a portion of the force exerted by the oscillating device on the machine. The oscillating device imparts an oscillatory



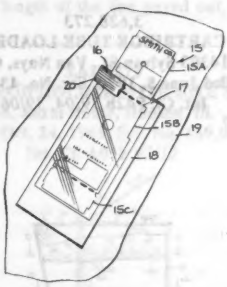
motion to the blade edge to dislodge earth masses from the ground being worked by the machine.

3,628,266

RETAIL PRICE TAG AND PROTECTIVE ENVELOPE ASSEMBLY

Lester V. Wise, Old Westbury, Long Island, and Henry A. Gripekoven, Bronxville, both of N.Y., assignors to Federal Business Products, Inc., New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,678
Int. Cl. A44c *3/00*
U.S. Cl. 40—10 R **7 Claims**



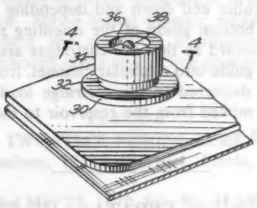
A retail merchandise price and data tag suitable for data processing, the tag being divided by tear lines into an upper section, a main section, and a lower section, the main section containing data related to an item of merchandise and being in coded punch hole or magnetic record form. The tag is partially inserted in an envelope formed by a rear panel and a transparent front panel releaseably secured to the rear panel. The upper section of the tag, which extends outside of the envelope, and the rear panel of the envelope are permanently attached to the merchandise. By stripping off the front panel of the envelope, one then has access to the main section of the tag which may be torn from the upper section for data processing.

3,628,267

LABEL ATTACHMENT

Arthur J. Minasy, Woodbury, N.Y., assignor to The National Bank of North America, New York, N.Y.

Filed Dec. 7, 1966, Ser. No. 599,922
Int. Cl. G09f *3/08*
U.S. Cl. 40—20 **6 Claims**



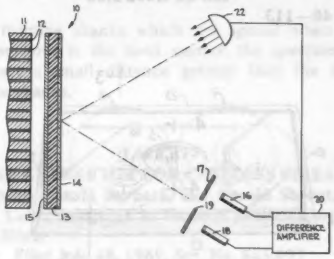
A label attachment arrangement comprising a tacklike element whose shank passes through a label and an article of merchandise. The shank is encased by and interlocked in a button. A plierlike attachment tool and a cutting tool for label removal.

3,628,268

PURE FLUID DISPLAY

Richard N. Johnson, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed May 28, 1970, Ser. No. 41,340
Int. Cl. G09f *11/00*
U.S. Cl. 40—28 R **10 Claims**



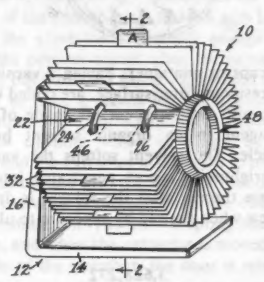
A pure fluid display. A thermally sensitive layer whose optical characteristics are a function of temperature is subjected to the impingement of a plurality of fluid sources whose temperature is different from the ambient temperature of the sensitive layer. This produces a temperature pattern on the surface of the sensitive layer which in turn creases a color pattern to correspond to the temperature pattern. The fluid sources, which may comprise the outputs of a plurality of fluid amplifiers, are generally arranged in the form of a two-dimensional array parallel to the surface of the sensitive layer. Coextensive supporting members having low-thermal capacity are provided on both sides of the sensitive layer, the first supporting member being opaque and the second being transparent on the viewing side. A temperature control system is provided to maintain the sensitive layer within a predetermined temperature range.

3,628,269

MAGNETIC CARD INDEX

Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill.

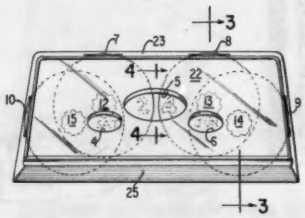
Filed Jan. 26, 1970, Ser. No. 5,557
Int. Cl. G09f *11/34*
U.S. Cl. 40—68.6 **13 Claims**



The present invention relates generally to rotary magnetic card index devices, and more particularly to devices of this general type in which magnet means is provided within a rotary index card supporting drum for causing the automatic fanning or lateral separation of a restricted number of index cards in the vicinity of said magnet means. The embodiment of the invention disclosed herein comprises a frame and a nonmagnetic index card supporting drum rotatably mounted

on said frame. A plurality of radially disposed index cards have their inner margins, equipped with unmagnetized magnetic areas, detachably associated with the drum periphery so as to cooperate with a fixed permanent ceramic type magnet within the drum to effect fanning or lateral separation of index cards located in the vicinity of the magnet.

3,628,270
PERPETUAL CALENDAR
Jack Fairchild Fleming, Morris Plains, N.J., assignor to Sterling Plastics Company, Mountainside, N.J.
Filed Nov. 19, 1969, Ser. No. 878,156
Int. Cl. G09d *3/08*
U.S. Cl. 40—113 **5 Claims**



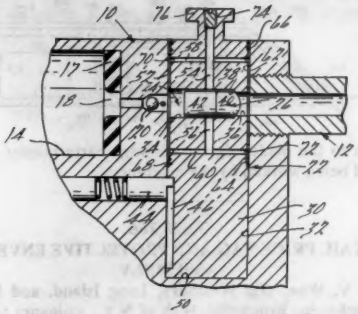
A perpetual calendar shows the day of the week, date of the month, and month, by means of rotatable dials. A small portion of the dials protrudes from the case to enable them to be manually turned. The dials are formed with an integral spring portion which cooperates with teeth on bosses, upon which the dials are mounted, to provide a detent action.

3,628,271
FLUORESCENT MARKING
Lelah A. Carrell, and Richard W. Morris, both of Crawfordsville, Ind., assignors to H-C Industries, Inc.
Filed Sept. 26, 1969, Ser. No. 862,815
Int. Cl. G09f *3/00*
U.S. Cl. 40—311 **6 Claims**

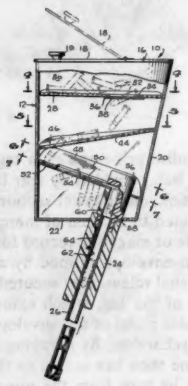
Container caps or containers having a varnish outer coating, or other resinous outer surface, are coded by marking indicia thereon with a fluorescent ink made of a fluorescent brightening agent in an organic solvent but having no resinous vehicle. The solvent softens the varnish and the fluorescent brightening agent penetrates into the varnish layer to remain therein after the solvent is dried off and is brought to view when desired by exposure to ultraviolet light.

3,628,272
CYLINDRICAL BREECH WITH SLEEVED OBTURATOR
Jules E. Van Langenhoven, La Hulpe, Brussels, Belgium, assignor to Engineering Developments Limited, Fribourg, Switzerland
Filed July 24, 1969, Ser. No. 844,458
Int. Cl. F41c *13/00*
U.S. Cl. 42—39.5 **6 Claims**

There is herein disclosed an air rifle and/or an air ignition system firearm having a movable breech in the form of a cylindrical plug with an expandable and contractable thin walled obturator jacket to obturate the firing chamber by expansion of the obturator jacket by application of force from high-pressure air and/or propellant gases.



3,628,273
CARTRIDGE TUBE LOADER
Andrew Lach, 14303 Sylvan St., Van Nuys, Calif.
Filed June 5, 1970, Ser. No. 43,677
Int. Cl. F42b *39/04, 39/06*
U.S. Cl. 42—87 **12 Claims**



Cartridge tube loader for the loading of rimmed cartridges for firearms serially into a tube from whence the cartridges can be serially delivered into a firearm magazine. The cartridge tube loader has a reservoir or storage compartment for randomly oriented rimmed cartridges. A manually operated gate controls the delivery of cartridges from the reservoir into orienting means. The orienting means engages upon the cartridge rim so that the cartridges are finally positioned side by side with bullet end down and depending from the cartridge rim. A bottom guide of the orienting means extends angularly downward so that the cartridges are delivered off the end of the guide into a tubular channel, from whence the cartridges are delivered to the cartridge loading tube. The cartridges are moved from the reservoir to the tube via the force of gravity.

ERRATA

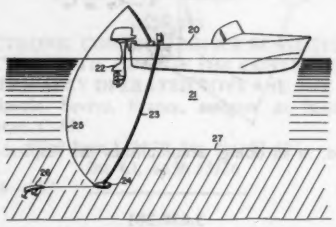
For Classes 42—25 and 42—62 see:
Patent Nos. 3,628,277 and 3,628,278

3,628,274

TEMPERATURE-SENSING SYSTEM FOR PLACEMENT OF FISHING LURES

Charles P. Wojahn, Holland, Mich., assignor to Charles William Wojahn, Holland, Mich., a part interest

Filed Aug. 7, 1969, Ser. No. 848,197
Int. Cl. A01k *95/00, 97/00*
U.S. Cl. 43—43.12 4 Claims



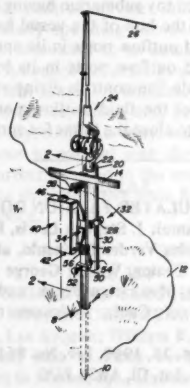
A weighted device releasably holding a fishline near the lure, incorporating a temperature sensor for reading the exact temperature of the water in which the lure is moving, regardless of the length of the line payed out, or the line attitude.

3,628,275

FISHING ROD HOLDER WITH BITE SIGNAL

Charlie C. Howard, Rural Route, Hudson, Ill.

Filed Oct. 24, 1969, Ser. No. 869,040
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 2 Claims



A cuplike socket member is pivotally and tiltably bracketed on a ground penetrating and anchoring standard. This standard provides an upstanding portable stake and is provided on a median side portion with a flashlight which provides a pull-responsive bite signal. The handle is a fishing rod is removably inserted in the socket. When the fish takes the hook, the rod tilts the socket member whose bottom portion presses a spring-returned pushbutton switch to operate the visual signal. Spring-biased plunger means is mounted atop the standard and assists in maintaining the socket member in a balanced ready-to-function position.

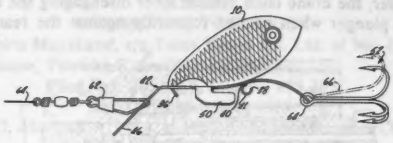
3,628,276

TWO-PIECE FISHING LURE

Thomas E. Coulson, 15182 Warwick Circle, Westminster, Calif.

Filed May 28, 1970, Ser. No. 41,399
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.09 10 Claims

A fishing lure having an elongate body, a resilient unitary carrier snap embedded longitudinally in the body and a removable hook carrier of flat resilient material snapped under the body, the hook carrier bearing a triple-shank, barbed hook. shaped ends of the carrier snap extend under



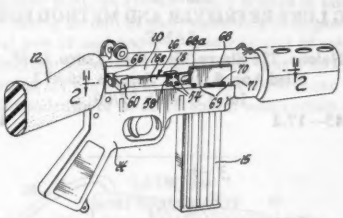
the body forming shanks which are spread when passed through apertures in the hook carrier, the apertures being spaced apart a small distance greater then the distance between the shanks.

3,628,277

ROUND EXTRACTOR FOR CASELESS FIREARM

Roy D. Plumer, Santa Barbara, and Harold Shrout, Goleta, both of Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed July 18, 1969, Ser. No. 843,097
Int. Cl. F41c *15/00, 15/02*
U.S. Cl. 42—25 4 Claims



An extractor for removing a round of caseless ammunition from the chamber of a firearm capable of firing caseless ammunition. The extractor comprises an elongated spring steel member having a forked end providing a pair of spaced spring fingers which are adapted to embrace the molded propellant of a round of caseless ammunition. The elongated spring steel member is slidably supported by a guide block mounted on the exterior of the firearm and the spring steel member can be axially projected into a position where it grips the round of caseless ammunition and then moved back to withdraw the round from the chamber of the firearm. The spaced fingers of the extractor are formed with beveled edges which permit the extractor to slidably engage the molded propellant of the caseless round when the extractor is being moved forward but include a sharp edge which bites into the caseless round to form a means for withdrawing the round from the chamber when the extractor is pulled back. The firearm has an opening which is closed by a pivotally mounted door and the extractor is arranged to move the door to an open position and grip the caseless round of ammunition, when the extractor is projected into the chamber to grip the round of ammunition. The door is spring biased toward a closed position, and when the extractor is moved back to the position outside of the chamber, the door is returned to the closed position.

3,628,278

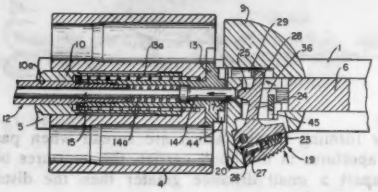
REVOLVER CYLINDER CRANE LATCH MECHANISM

William B. Ruger, Southport, Conn., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.

Filed Feb. 11, 1970, Ser. No. 10,525
Int. Cl. F41c *1/00*
U.S. Cl. 42—62 8 Claims

The cylinder of a revolver rotatably mounted on a cylinder

crane is retained in its closed or firing position by a spring-pressed crane latch plunger that engages an opening formed in the frame of the revolver. A crane latch release lever is pivotally mounted on the frame for rotation in a horizontal plane that coincides with the axis of the rotation of the cylinder, the crane latch release lever disengaging the crane latch plunger when rotated forwardly against the rearward



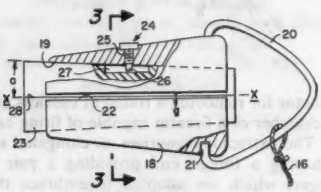
end of the plunger. The crane latch release lever also may cooperate with the cylinder-actuating pawl to prevent the cylinder from being moved from its closed position to its open position when the revolver is cocked and to prevent the revolver from being cocked when the cylinder is in its open position.

3,628,279

FISHING LURE RETRIEVER AND METHOD FOR USING SAME

William Halone, 776 Sierra View Way, Chico, Calif.

Filed Apr. 8, 1970, Ser. No. 26,672
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **10 Claims**



A fishing lure retriever comprises a tubular metallic housing defining a tapered bore having a mating, tubular plastic sleeve disposed therein. Overlying longitudinal slits are formed through the housing and sleeve to permit the retriever to be placed onto a fishing line having a snagged lure attached to its free end. When the sleeve is moved axially in the housing, the slit formed on the sleeve closes to prevent the fishing line from escaping. The retriever is then lowered by a recovery cable attached thereto to free the fishing line and attached lure.

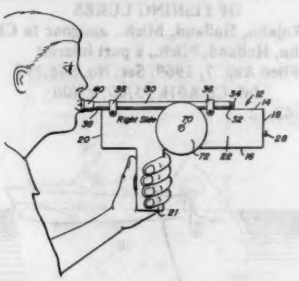
3,628,280

BREATH POWERED OSCILLATOR NOVELTY

Richard L. Nave, 805 W. Mulberry Ave., San Antonio, Tex.

Filed Sept. 28, 1970, Ser. No. 75,832
Int. Cl. A63h *29/16*
U.S. Cl. 46—44 **10 Claims**

A breath powered toy held and supported by either hand and adapted to stimulate breathing, improve respiratory capabilities by exercising the user's lungs and unique in that its attractive operation promotes one's incentive to use it. A column of air is blown by way of a tube and suitably ported conduit means into an oscillatory or rocking cylinder, that is, a cylinder (with or without a figure toy) provided with a piston whose reciprocating pitmanlike rod operates a shaft-supported disk and a complemental flywheel. This intriguing cylinder-piston-eccentric assembly alerts and engenders interest and, in so doing, accomplishes the respiratory result desired.

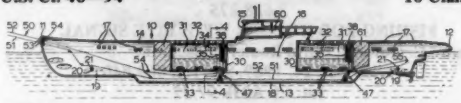


3,628,281

SUBMARINE WITH REMOTELY CONTROLLED DIVING AND SURFACING MEANS

Gary Horace Whitman, 68 Eaglewood Blvd., Mississauga, Ontario, Canada

Filed Sept. 18, 1970, Ser. No. 73,447
Int. Cl. A63h *23/00, 23/04*
U.S. Cl. 46—94 **10 Claims**



A remote controlled toy submarine having neutral buoyancy. A closed tank in the hull of the vessel has separate fluid inflow ports and fluid outflow ports in its upper portion, and free fluid inflow and outflow ports in its lower portion. A remote control flexible line controls diving vanes on the hull and means to control the fluid outflow ports, to open the latter for diving and to close the latter for surfacing.

3,628,282

ARTICULATED FASHION DOLL

Rollin C. Johnson, Jamul; J. Stephen Lewis, Pacific Palisades; Jack H. Malek, Palos Verdes Peninsula, all of Calif.; Herbert J. Peters, La Center, Wash.; George Sanchez, Compton; Jurgis Sapkus, Manhattan Beach, and John W. Ryan, Los Angeles, all of Calif.. assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 25, 1969, Ser. No. 861,016
Int. Cl. A63h *3/20*
U.S. Cl. 46—161 **1 Claim**

A doll of lifelike appearance with limbs that move in a lifelike manner. The head of the doll is coupled to the neck

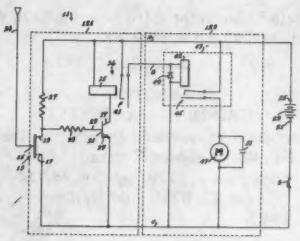
by a double ball-and-socket joint that permits turning and tilting of the head. The upper arm is connected to the shoulders by a combined ball-and-socket and pin joint, while the hand is coupled to the arm by a double-pin joint. The leg is connected to the torso by a sidewardly extending ball-and-socket joint that allows the legs to move apart and together as well as to kick up and back, while the foot is connected to the lower leg by a ratchet joint to position the foot for low and high heel shoes.

3,628,283

ELECTRONIC CONTROL DEVICE SENSITIVE TO ELECTROSTATIC CHARGE FOR CONTROLLING ELECTRICALLY OPERATED TOYS AND THE LIKE

Henri Mizoule, Sevres, France, assignor to Mattel, Inc., Hawthorne, Calif.

Filed June 1, 1970, Ser. No. 42,421
Int. Cl. A63h *33/26*
U.S. Cl. 46—233 **8 Claims**



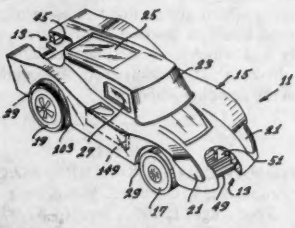
An electronic control device utilizing a field effect transistor or similarly operating element wherein its input or gate electrode is connected to an antenna and its output or channel portion is connected in series with a load impedance across a DC current source. A utilization portion including a current activated device, which may be a part of an animation portion of a toy, such as a relay, is also connected across the current source in parallel with the transistor's channel portion and is further coupled to the output of the transistor and responsive to its conductive state for activating the current activated device.

3,628,284

MINIATURE HIGH-SPEED ELECTRIC TOY RACING VEHICLE WITH RECHARGEABLE BATTERY

George Soulakis, Los Angeles; William R. Baynes, and Harvey W. La Branche, both of Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 2, 1970, Ser. No. 7,487
Int. Cl. A63h *29/22*
U.S. Cl. 46—243 LV **52 Claims**



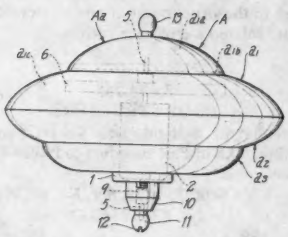
A lightweight support structure carrying front and rear wheel assemblies and carrying a rechargeable battery with electric circuitry including an on-off series connected switch and a battery charging arrangement, the circuitry connecting the battery to a self-contained high-speed electric motor except when the battery is being charged. The motor is directly coupled to the vehicle's driven wheel assembly for high-speed operation.

3,628,285

GYROSCOPIC TOP DEVICE

Masahiro Murakami, c/o Tomy Kogyo Co. Ltd. of No. 10, 9, 7-chome, Tateishi, Katsushika-ku, Japan

Filed Nov. 20, 1969, Ser. No. 878,281
Int. Cl. A63h *33/26, 1/06*
U.S. Cl. 46—243 **6 Claims**



An electrically operated gyroscopic top device which comprises a hollow body, an electric motor housed in said hollow body and having an output shaft extending in alignment with the central axis of said body, at least one end of said output shaft projecting outwardly of said body, and a flywheel fixedly mounted on the output shaft. The device can be used either independently or in combination with certain accessories.

3,628,286

AMPHIBIAN TOY

Arimura Mashahiro, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1970, Ser. No. 86,898
Claims priority, application Japan, Mar. 7, 1970, 45/22255
Int. Cl. A63h *33/26, 23/10*
U.S. Cl. 46—247 **10 Claims**

A toy for use in water and on solid surfaces having a casing formed in the shape of some amphibious animal, and a working unit removably installed therein. The casing includes a pair of rudders, shaped for instance like the wings of a penguin, and a water tank which, when containing water, enables the toy to swim underwater. The working unit contains a switch mechanism, which can be operated by means of a lever extending through the casing, electric cells, a motor, transmission gears and the like. The motor rotation is conveyed to a pair of flat-shaped foot members through gearing and shafting. These foot members can be slid along the arched bottom of the working unit and fixed at different positions, so that the toy is capable of making variety of motions in water besides walking on solid surfaces.

3,628,287

PRODUCTION OF DIOSGENIN BY PLANT TISSUE CULTURE TECHNIQUE

Emil John Staba, Minneapolis, Minn., and Balkrishena Kaul, Jersey City, N.J., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Continuation-in-part of application Ser. No. 740,076, June 26, 1968, now abandoned. This application Oct. 20, 1969, Ser. No. 867,894

Int. Cl. A01g *31/00;* A01n *9/24;* C12k *9/00;* C07c *173/00*

U.S. Cl. 47—58 8 Claims

A method for growing callus or undifferentiated tissue cultures of *Dioscorea* seeds and other plant parts under aseptic conditions thus producing diosgenin which is recovered and may be used in the production of corticosteroids, hormones, anabolics and related steroid derivatives.

3,628,288

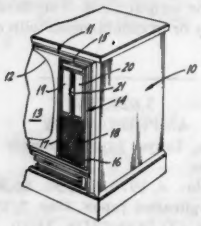
DOOR STRUCTURE

Arthur Berenbaum, Holland, and Robert M. McDonough, Philadelphia, both of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Sept. 3, 1970, Ser. No. 69,282

Int. Cl. E05c *7/06*

U.S. Cl. 49—109 5 Claims



Hinged door means in which movement of one of a pair of doors causes corresponding and simultaneous movement of the other. The apparatus includes means for mounting the doors for opening and closing movements across an access area provided in the cabinet frame or mask. A special panel is provided which forms part of the decorative finish of the cabinet mask, serves to form bearing means for the doors, secures the doors and door-operating linkage in operative position, and provides a stop against which the doors abut when in closed position.

3,628,289

SLIDING DOOR CONSTRUCTION

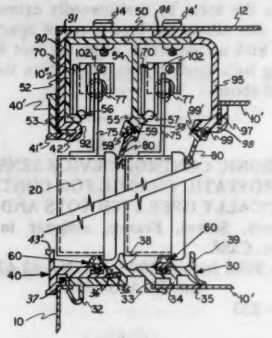
Herman L. Buffington, and Robert M. Stribling, both of Spartanburg, S.C., assignors to Beverage Air Company, Spartanburg, S.C.

Filed May 25, 1970, Ser. No. 40,087

Int. Cl. E05d *13/02*

U.S. Cl. 49—409 3 Claims

A refrigerator door unit received in an opening in a refrigerator wall and adapted for horizontal movement therein to provide access to a refrigerator compartment. The door system comprises a unit frame and two parallel doors mounted for horizontal movement therein. The system is unique, in that, a complete thermal barrier is provided across the access opening. Such a barrier is accomplished by thermally insulated doors equipped with means to seal the space between the doors and by the unit frame which exposes no conductive path between the refrigerated interior of the compartment and the ambient outside air.



3,628,290

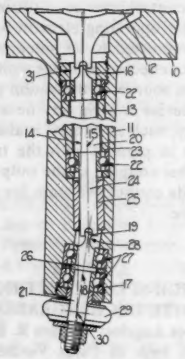
GRINDING MACHINES

William Albert John Wilson, and Hempstead Hemel, both of 16 Ravensdell, Hertfordshire, England

Filed June 9, 1970, Ser. No. 44,754

Int. Cl. B24b *5/00, 41/00*

U.S. Cl. 51—134.5 2 Claims



A grinding spindle for supporting and transmitting drive to a rotary grinding wheel, the spindle comprising a head portion whereby the spindle can be secured to a grinding machine, a cylindrical portion extending from the head portion and there being provided within the cylindrical portion, a pair of bores which are inclined to each other and to the axis of the cylindrical portion. The bores contain shafts respectively and which are interconnected by the universal joint. The driven shaft projects from the cylindrical portion and mounts the grinding wheel.

3,628,291

AUTOMATIC BAND POLISHING MACHINE

Ottorino Visconti, 11, V. Carducci, Milan, Italy

Filed Aug. 11, 1970, Ser. No. 62,975

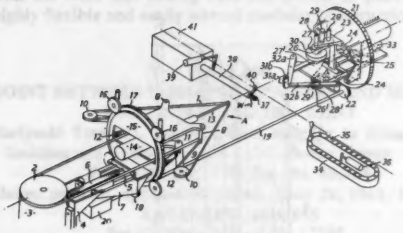
Claims priority, application Italy, Sept. 16, 1969, 22087 A/69

Int. Cl. B24b *21/16*

U.S. Cl. 51—148 11 Claims

A machine for polishing inside walls of a ring-shaped workpiece, such as handles of scissors and the like, in which the

workpiece is automatically selected, set up in position and burnished by an endless belt, after which the workpiece is dropped and another workpiece selected. The machine includes a pair of spaced supports for the endless belt with the workpiece therebetween and performs the polishing operation automatically by pushing a loop of the belt through the



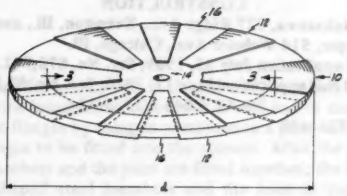
workpiece opening, expanding the passed-through loop, placing this expanded loop upon a pulley, and then rotating the belt, the spaced supports also being simultaneously rotated around its longitudinal axis and the workpiece position altered so as to enable all interior surfaces of the ring to be polished.

3,628,292

ABRASIVE CUTTING WHEELS

Charles V. Rue, Tiffin, Ohio, assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,653
Int. Cl. B24d *5/12, 7/02*
U.S. Cl. 51—206 R **6 Claims**



Cutting wheels are provided having an abrasive matrix including a plurality of abrasive grains and a resinous bonding agent. The cutting wheels have bosses on both sides of the wheel. The bosses are alternately arranged with intervening grooves on both sides of the wheel and extend in a generally radial direction.

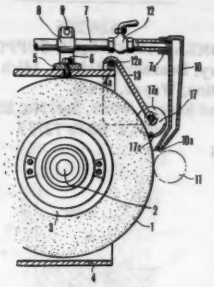
3,628,293

APPARATUS FOR INTERCEPTING AIR FILMS ROTATING WITH GRINDING WHEELS

Akiyoshi Kobayashi, and Kikujiro Nomura, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Apr. 28, 1970, Ser. No. 32,614
Claims priority, application Japan, May 12, 1969, 44/43405
Int. Cl. B24b *55/02*
U.S. Cl. 51—267 **3 Claims**

In apparatus for intercepting the air film rotating with a grinding wheel for positive supply of coolant to the grinding point of the grinding wheel, an arcuate baffle plate adjacent to a coolant nozzle for supplying coolant and extending in parallel with the axis of the grinding wheel is pivotally mounted on the outer end of a cover plate covering a portion of the periphery of the grinding wheel to take up the air film



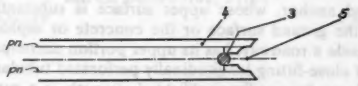
and deflect the same away from the periphery of the grinding wheel.

3,628,294

PROCESS FOR MAKING A BEVELLED CAVITY IN A SEMICONDUCTOR ELEMENT

Gunter Sattler, Mannheim-Kafertal (D), and Klaus Weimann, Lampertheim, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed May 12, 1969, Ser. No. 823,592
Claims priority, application Germany, May 17, 1968, P 17 64 326.4
Int. Cl. B24b *1/00*
U.S. Cl. 51—283 **3 Claims**



A bevelled cavity in the periphery of a disc of semiconductor material having at least two parallel spaced PN-junctions reaching to the edge of the disc is formed by grinding out the cavity, the grinding being carried out by using separate grinding wires which are of progressively smaller diameter.

3,628,295

MANUFACTURE OF PLASTIC ARTICLES HAVING A MOTTLED SURFACE

Philip F. Curtiss, Myerstown, Pa., assignor to Paulsboro Chemical Industries, Inc.

Filed Oct. 27, 1969, Ser. No. 869,882
Int. Cl. B24c *1/06*
U.S. Cl. 54—319 **4 Claims**

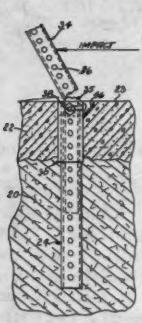
This invention relates to the manufacture of plastic articles having a mottled surface, particularly sleeves of textile bob-

bins used to support yarn packages, by blasting them with glass beads made of silica glass.

3,628,296
BREAKAWAY SIGN SUPPORT

Herbert J. Henry, Dearborn Heights, Mich., assignor to Unistrut Corporation, Wayne, Mich.

Filed Sept. 2, 1969, Ser. No. 854,637
Int. Cl. E04h 12/32
U.S. Cl. 52—98 15 Claims

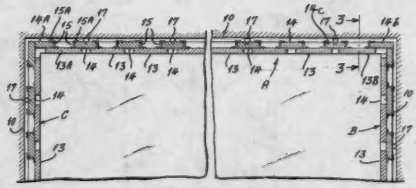


A structural sign support assembly composed of a plurality of telescopically assembled, perforated tubular members comprising a ground anchor, a reinforcing sleeve and a post member in which the longitudinally perforated tubular ground anchor, whose upper surface is substantially flush with the ground surface or the concrete or asphalt topping alongside a roadway, has its upper portion encompassed by a larger close-fitting longitudinally perforated tubular reinforcing sleeve for rigidity and added strength at a surface level breakaway point. A longitudinally perforated tubular sign support post is telescopically retained within the ground anchor and secured by a bolt member or members extending through aligned perforations of the post, the ground anchor and the reinforcing sleeve. The perforations of the post at or immediately above the top surface of the ground anchor and its supporting sleeve provide a relatively weak breakaway section so that the post will break off on impact from a vehicle or the like above the ground surface without damaging the reinforcing sleeve and the tubular ground anchor with the lower end of the standard or post remaining therein. The post can thereafter be easily removed from the ground anchor which remains in the concrete or soil of the ground for replacement with a new post.

3,628,297
WALL INSTALLATION

Cletus Richardson, 3419 A. Winnebago, St. Louis, Mo.

Filed Jan. 2, 1970, Ser. No. 354
Int. Cl. E04f 13/10
U.S. Cl. 52—267 6 Claims

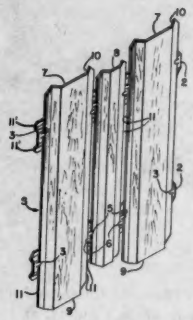


A wall installation including means for aligning and supporting a plurality of lapped panels connected by panel securing means which are concealed during panel erection.

3,628,298
DECORATIVE SHUTTER FOR MOBILE HOMES AND THE LIKE

Raymond W. Sickler, RD #2, Wellsburg, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,588
Int. Cl. E04c 2/42; E06b 9/01
U.S. Cl. 52—473 4 Claims

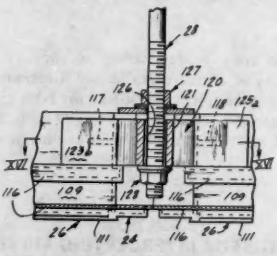


A decorative shutter for mobile homes and the like comprising a plurality of vertically arrayed extruded aluminum panels held in a desired assembled fashion by means of horizontally disposed extruded aluminum stringers having a plurality of short tabs punched therefrom which receive opposite edge portions of the vertically arrayed panels. The assembled shutter is affixed to the side of the mobile home or the like by means of suitable fastening means passed through the stringers into the side of the mobile home or the like.

3,628,299
ARCHITECTURAL SYSTEM OF INTERIOR MODULAR CONSTRUCTION

Yoshio Nakazawa, 927 Ridge Ave., Evanston, Ill., and Harold A. Lipper, 514 Webster Ave., Chicago, Ill.

Original application July 15, 1969, Ser. No. 870,942. Divided and this application June 11, 1970, Ser. No. 57,882
Int. Cl. E04b 5/52, 5/58
U.S. Cl. 52—488 3 Claims



An architectural system of modular construction for building structures including floor and ceiling rails or stringers forming rectangular floor and ceiling sections in vertical alignment with one another, pedestals adapted to be supported on a structural concrete floor for supporting the floor rails, suspension rods adapted to be hung from a structural concrete ceiling for supporting the ceiling rails and vertical corner posts which may be erected at the corners of any of the vertically aligned floor and ceiling sections to extend between the floor and ceiling rails. Panels for the floor and ceiling are supported in the same plane as the floor and ceiling rails on horizontal flanges extending from the floor and

ceiling rails. Thus the panels are disposed adjacent the rails, and do not overly the rails. Partition wall panels may be mounted between the erected corner posts in abutting relation with the floor and ceiling rails for selective partitioning of the floor and ceiling sections. The pedestals are adapted for vertical adjustment from above the floor line without removing the floor panels and the corner posts and partition wall panels can be erected and removed without interference with the floor and ceiling rails and panels to provide for a highly flexible and easily altered modular construction.

3,628,300

JOINT BETWEEN H-SHAPED MEMBERS AND METHOD FOR PRODUCING THE JOINT

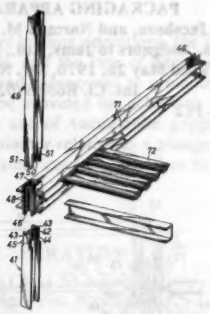
Nariyoshi Tsurumi, Tokyo, Japan, assignor to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Filed June 24, 1970, Ser. No. 48,980

Claims priority, application Japan, June 28, 1969, 44/51306; Apr. 25, 1970, 45/35555

Int. Cl. E04c *3/06*; **B23p** *17/00*

U.S. Cl. 52—721 **15 Claims**



Method for joining two H-shaped steel members each provided with longitudinal cutouts in a web and in each end of opposite flanges by using in combination a joint having a web and flanges to be fitted into the cutouts. After the H-shaped steel members and the joint are fitted together, the flanges of the H-shaped steel members and the joint in engagement with each other are welded together.

3,628,301

CLOSURING CONTAINERS

Emile Raymond Vermeulen, Ghent, Belgium, assignor to Sidaplax N.V., Gentbrugge, Belgium

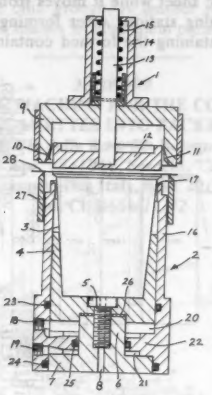
Filed Oct. 21, 1969, Ser. No. 868,162

Claims priority, application Great Britain, Oct. 28, 1968, 51,058/68

Int. Cl. B65b *61/18*, *7/28*

U.S. Cl. 53—14 **13 Claims**

Method and apparatus for closuring a lipped container with a sheet of biaxially orientated thermoplastic by pushing down on portions of the sheet overlapping the lip of the container with a heating element which softens but does not heat-seal the sheet to the container, while at the same time clamping heat-softened overlapping portions tightly against the container to prevent them from shrinking. The pushed-down portions are then crimped under the lipped edge whereupon the portion of the sheet extending over the open top of the container is shrunk by heating to pull the crimped portions tightly underneath and against the lip. The package thus formed includes a sheet closure of biaxially orientatable thermoplastic, the closure having an outer biaxially orientated portion crimped tightly under the lip of a container without being heat-sealed thereto and an inner, taut, relatively unorientated portion extended over an open end of the container.



3,628,302

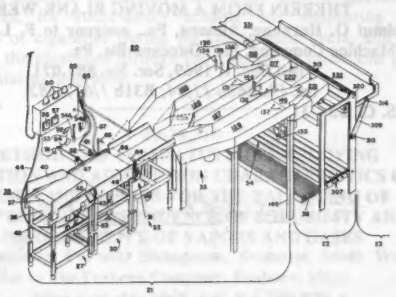
BAG PACKAGING SYSTEM

John T. Roberts, Simpsonville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Feb. 9, 1970, Ser. No. 9,869

Int. Cl. B65b *57/02*, *31/04*

U.S. Cl. 53—59 **7 Claims**



Apparatus and method for classifying products to be packaged, distributing the classified products to index positions corresponding to their classifications and holding the classified products for packaging, indexing bags into product loading positions corresponding to the index positions by conveying imbricated taped bags into loading positions keyed to the classifications, inflating the taped bags, inserting the indexed items into the bags and removing the loaded bags from the loading position, conveying the loaded bags to an evacuating and closing position, evacuating and closing the bags and subsequently shrinking the bags.

3,628,303

METHOD OF FORMING AND FILLING CONTAINERS AT HIGH RATES OF SPEED

Seymour C. Graham, 330 W. Diversey, Chicago, Ill.

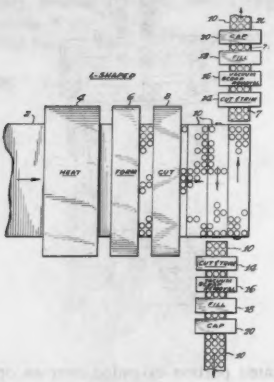
Filed July 24, 1969, Ser. No. 844,313

Int. Cl. B65b *47/02*

U.S. Cl. 53—30 **11 Claims**

The method of thermoforming and filling containers while operating both forming and filling equipment at optimum speeds. This is accomplished by taking a wide sheet or web of

plastic and forming a substantial number of transversely spaced containers. The stroke, or forward motion of the sheet, is kept as short as practical, thus minimizing any heat loss in the plastic sheet while it moves from the heating station to the forming station. After forming, portions of the plastic sheet containing the formed containers—or the containers themselves—are severed from the main web and moved off at an angle relative to the longitudinal direction movement of the main web to filling stations, where filling can take place at the desired rate. With this system, there can be utilized the advantages of efficient forming, and of rapid filling.

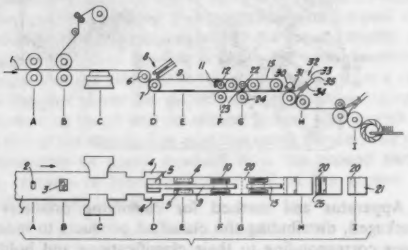


3,628,304

METHOD OF FORMING ENVELOPES HAVING INSERTS THEREIN FROM A MOVING BLANK WEB

Helmut O. Hornung, Altoona, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Dec. 1, 1969, Ser. No. 881,071
Int. Cl. B65b *11/34*; **B31b** *1/62, 1/82*
U.S. Cl. 53—31 **7 Claims**



A method of forming envelopes having inserts therein in a continuous manner from a moving blank web of paper or the like. The web is advanced along a line at a selected forward speed and sequentially has side flaps cut therein, inserts placed between those side flaps, the side flaps folded inwardly into overlying contact with the insert materials, bottom and closure flaps cut therein and gummed as required and finally, folded and sealed to form envelopes having inserts sealed therein.

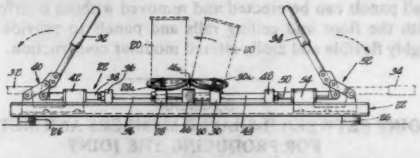
3,628,305

METHOD AND APPARATUS FOR APPLYING CARRIERS ONTO CONTAINERS

Ronald C. Owen, Harwood Heights, and Robert J. Jurin, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,529
Int. Cl. B65b *15/00, 17/02, 67/00*
U.S. Cl. 53—35 **14 Claims**

The present invention relates generally to improvements in container carrier applicators and more particularly to apparatus for and methods of applying to containers, carriers of the type comprising a sheet of stretchable or elastic material having at least one container accommodating opening provided therein. The apparatus disclosed herein comprises a



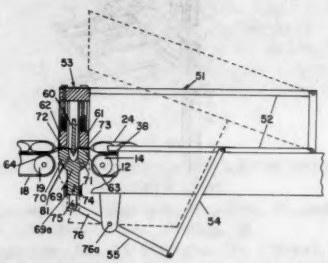
stationary platelike base section and a pair of reciprocable sections associated therewith, having a plurality of pins arranged in predetermined spaced relation. Handles pivotally mounted on the stationary base section serve to control the reciprocation of the pin carrying sections and consequently the stretching of the carrier material.

3,628,306

PACKAGING APPARATUS

Sylvester O. Jacobson, and Norman M. Arneson, both of Eau Claire, Wis., assignors to Jams, Ltd., Eau Claire, Wis.

Filed May 26, 1970, Ser. No. 40,583
Int. Cl. B65b *9/02*
U.S. Cl. 53—182 **1 Claim**



Apparatus for packaging articles between two heat-sealable plastic films. The apparatus feeds roll-stock film over an infeed conveyor and articles to be packaged are placed on the film. A second roll-stock film is fed over the top of the articles and sealed to the bottom film by a transverse timed-drop heat-sealing knife. The sealing knife operates between spring tensioned clamping bars which hold the films together both fore and aft of the sealing knife. The lower clamping bar is provided with a series of air vents for cooling the transverse seals. The sides of the package are sealed by a pair of heat-sealing wheels which are insulated by inwardly spaced discs to protect the articles being packaged against scorching. A perforator saw wheel runs on the top film as it passes over a rubber roller to provide a perforated line of weakness in the top film.

3,628,307

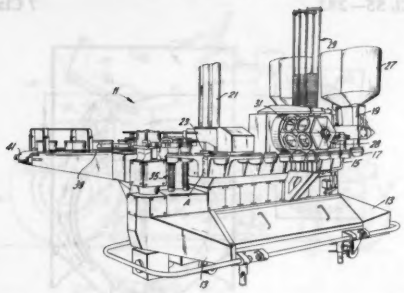
CONTAINER CAPPING APPARATUS

William Herbert Crossdale, Morris Plains, and Donald Owen Johnson, Matawan, both of N.J., assignors to American Can Company, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,169
Int. Cl. B65b *7/28*
U.S. Cl. 53—299 **18 Claims**

The invention is directed to apparatus particularly adapted for securing coverings or lids upon containers primarily used for storage of generally perishable goods. The lids are supplied to a rotary element upon which they are held in a tem-

porary or quasipermanent location to be transferred at appropriate later time periods individually to loaded containers moving along a conveyor line to an outlet region. The loaded containers are carried along a conveyor which is moved in step-by-step fashion prior to and following loading. Both the loadings and the lid coverings are applied during conveyor movement arrest periods. Provisions are made for coordinating all of the container loading operations, the movements of the covering elements, and the rate of advance of the container both prior to and subsequent to a loading or takeoff. Various means may be provided for achieving the foregoing results including the use of vacuumlike grippings and the positioning of the container relative to a plungerlike element to discharge the container covering and then to transfer it to the container proper.



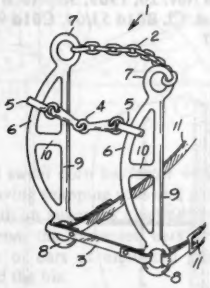
ERRATUM

For Class 53—230 see:
Patent No. 3,628,309

3,628,308
BIT

Walter W. Lozier, 937 Fredensborg Canyon Rd., Solvang, Calif., assignor Georganne C. White, San Francisco, Calif., part interest

Filed May 11, 1970, Ser. No. 36,214
Int. Cl. B68b *01/06*
U.S. Cl. 54—8 4 Claims

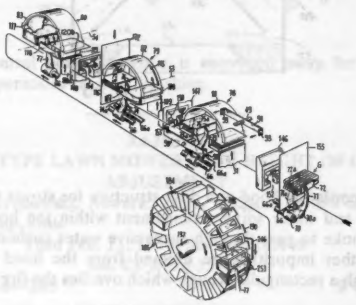


In order to prevent excessive pulling of the mouth of a horse by the reins, control is accomplished by pressure on a nerve above the chin groove of the horse nearer to the neck. The bit has a pair of parallel shanks, each of which has a forwardly curved shank portion slideable in a ring on the end of the mouthpiece which latter may be a chain or broken snaffle. A chin strap connects the tops of the shanks and is located higher than the chin strap on a regular bit. The reins are secured to the lower ends of the shanks, so that when the reins are pulled the curved portions of the shanks slide downward with the rings on the ends of the mouthpiece and pivot around the rings so as to draw the chin strap against a nerve above the chin groove. A leather strap connects the lower ends of the shanks to keep them parallel.

3,628,309
AUTOMATIC MACHINE FOR THE CONDITION OF CIGARETTES INTO PACKETS

Ariosto Seragnoli, Via della Rose 50, Bologna, Italy

Filed Apr. 15, 1968, Ser. No. 721,525
Claims priority, application Italy, Apr. 20, 1967, 1621A/67
Int. Cl. B65b *11/42*
U.S. Cl. 53—230 2 Claims

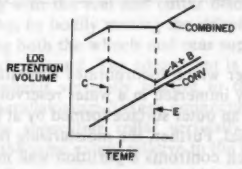


An automatic cigarette packaging machine having a plurality of pairs of translator members, having opposed parallel surfaces disposed in parallel with axially aligned batches of cigarettes, for successively holding and supporting the batches of cigarettes during packaging maneuvers, and for moving the cigarettes through the machine in directions perpendicular to their axes.

3,628,310
METHOD AND APPARATUS FOR EMPLOYING SOLUTION AND ADSORPTION CHARACTERISTICS OF SOLIDS AND LIQUIDS FOR THE BALANCING OF TEMPERATURE DEPENDENCE OF SOLUBILITY AND ADSORBABILITY OF VAPORS AND GASES

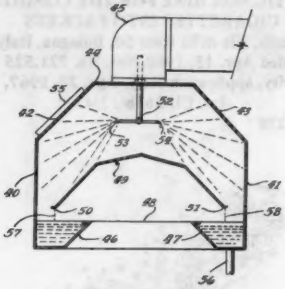
John Howard Purnell, Bishopston, Swansea, South Wales, assignor to The Foxboro Company, Foxboro, Mass.

Filed Sept. 16, 1968, Ser. No. 759,970
Claims priority, application Great Britain, Nov. 14, 1967, 51,851/67
Int. Cl. B01d *15/08*
U.S. Cl. 55—67 13 Claims



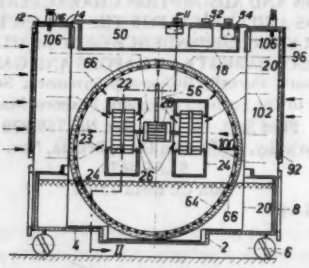
Method and apparatus for balancing over a selected range the temperature-dependence of a characteristic of a chemical system exhibiting mass transfer of species through and between phases over a selected range by introduction of a countervailing temperature effect exhibited by a substance or a mixture of substances having a temperature range between phase or species changes for the purpose of achieving a result exhibiting a predetermined and restricted temperature dependence.

3,628,311
AIR PURIFICATION SYSTEMS
Nino F. Costarella, and Anthony A. Giuffre, both of Milwaukee, Wis., assignors to Nino's Inc., Milwaukee, Wis.
Filed July 7, 1969, Ser. No. 839,383
Int. Cl. B01d 47/06
U.S. Cl. 55—223 4 Claims



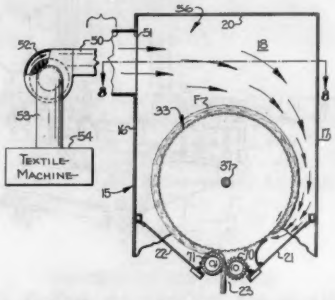
A ventilating hood and duct structure for stoves wherein a baffle and water spray arrangement within the hood forces the smoke to pass through successive water curtains. Grease and other impurities are drained from the hood structure through a rectangular trough which overlies the fire area.

3,628,312
HUMIDIFIER
Hans Rudolf Stoop, Mutschellen, and Karl Flury, Dietikon, both of Switzerland, assignors to Defensor AG, Zurich, Switzerland
Filed May 8, 1968, Ser. No. 727,476
Claims priority, application Switzerland, May 17, 1967, 6914/67
Int. Cl. B01d 46/10; F24f 3/14
U.S. Cl. 55—232 3 Claims



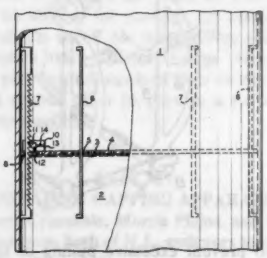
A humidifier which incorporates a rotatable moisturizing roller partially immersed in a water reservoir. The moisturizing roller has an outer surface formed by at least one layer of porous material. Further, the moisturizing roller has an open end face which confronts a partition wall member, a blower being located within the moisturizing roller. The partition wall member is provided with an air passage opening communicating with the interior of the roller through its open end face. The axis of the blower extends transversely with respect to the axis of rotation of the moisturizing roller and such blower provides a double-sided or dual inlet radial blower having a substantially spiral-shaped casing. This spiral-shaped casing having an outlet portion which extends through said air passage opening in the partition wall member and communicates with the outlet opening of the housing of the humidifier.

3,628,313
APPARATUS FOR SEPARATING TEXTILE FIBERS FROM CONVEYING AIR
Arnold Broadbent, Shaw, England, assignor to Parker-Cramer (Great Britain) Ltd., Lancashire, England
Filed May 21, 1969, Ser. No. 826,550
Claims priority, application Great Britain, June 4, 1968, 26,542/68
Int. Cl. B01d 46/26
U.S. Cl. 55—283 7 Claims



An apparatus for separating textile fibers from a conveying airstream while utilizing collected fibers to augment filtering fibers, dust and the like from the conveying airstream, wherein the fiber-laden airstream is directed against and in generally tangential relation to a cylindrical filter drum within a confining casing to form a porous air-filtering batt of fibers on the drum while the filtered air is exhausted from within the drum. Upon a predetermined rise in air pressure (back pressure) within the casing incident to the buildup of fibers on the drum, the drum is automatically momentarily rotated in the opposite direction from the flow of the airstream to expose a previously shielded portion of the filter drum to the flow of air therethrough sufficient to relieve the back pressure in the casing as a portion of the batt previously formed is removed from the filter.

3,628,314
PACKED-BED RETAINER
William C. McCarthy, and Merritt V. De Lano, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Nov. 20, 1969, Ser. No. 878,383
Int. Cl. B01d 53/04; C01d 9/04
U.S. Cl. 55—387 7 Claims



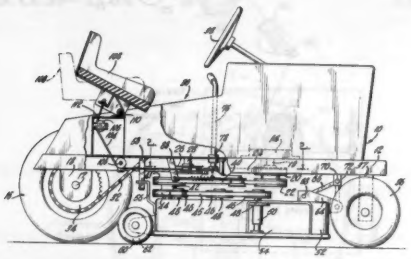
A packed-bed retainer which comprises an apertured plate which rests on the surface of the bed to be retained and which is guided to rest on the bed and move downward as the level of the bed drops but which is adapted with means to prevent movement of the plate along the guide in an upward direction.

3,628,315

MOWER SAFETY DEVICE

Robert W. Bartholomew, 318 Hickory St., Michigan City, Ind.

Filed Aug. 17, 1970, Ser. No. 64,192
Int. Cl. A01d 35/26
U.S. Cl. 56—10.5 8 Claims



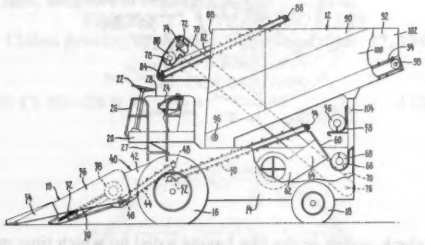
A safety device for controlling the delivery of power to the cutting blades of a riding mower having means thereon movable from a first position to a second position under the weight of an operator and back to the first position upon removal of the weight of the operator. The safety device comprises force applying means associated with the means movable by the operator and with a clutch which controls the transmission of power to the cutting means, the force applying means being effective to apply a force to disengage the clutch and halt the transmission of power to the cutting blades only upon removal of the weight of the operator.

3,628,316

SELF-PROPELLED SWEET CORN HARVESTER

John H. Rea, Sr., Box 86D, Touchet, Wash.

Filed May 5, 1969, Ser. No. 821,593
Int. Cl. A01d 45/02
U.S. Cl. 56—13.3 1 Claim



A self-propelled sweet corn harvester with a multiple row harvesting head having snapping rolls and gathering chains, a cleaning means with an auger for ejecting stalks and a fan to blow light trash from the harvested ears of corn, a bin for temporary storage of ears of unhusked green corn, and a conveyor to unload the bin.

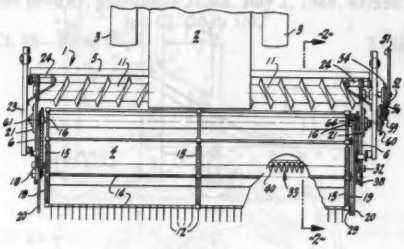
3,628,317

HARVESTER HEADER

Lester C. Lederer, Rt. 1, Box 226, Willows, Calif.

Filed July 20, 1970, Ser. No. 56,316
Int. Cl. A01d 57/02
U.S. Cl. 56—219 8 Claims

A harvester header is a leading portion of a mechanized harvester which gathers in grain or the like growing in the field, severs the grain near ground level, feeds the grain toward a central point usually by an auger-type feeder from



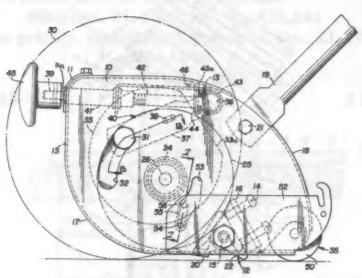
which central point the grain is conveyed away for some further operations such as threshing.

3,628,318

REEL-TYPE LAWN MOWER WITH HEIGHT OF CUT ADJUSTMENT

Ben T. Grobowski, Newark, Ohio, assignor to A-T-O Inc., Cleveland, Ohio

Filed Feb. 11, 1970, Ser. No. 10,449
Int. Cl. A01d 55/20
U.S. Cl. 56—249 8 Claims



A reel-type lawn mower with height of cut adjustment by means of which the reel and associated cutter blade or bedknife are maintained in cooperative relationship, with the cutter blade in a predetermined angular relationship relative to the ground, or other surface on which the supporting wheels are disposed, throughout the extent of the adjustment. The adjustment is such that it simultaneously adjusts both side plates along with the reel and cutter blade or bedknife supported thereby, by bodily moving the sideplates vertically while maintaining both the wheels and rear supporting roller in contact with the ground. The adjustment is accomplished by moving the wheels vertically relative to the side plates and, through a parallelogram linkage connection, simultaneously moving the supporting roller vertically in the same direction and to the same extent relative to the sideplates.

3,628,319

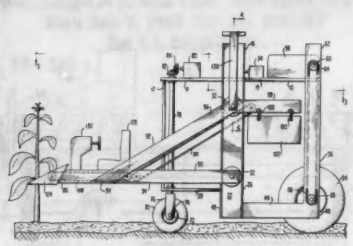
METHOD AND APPARATUS FOR HARVESTING TOBACCO

Bobby G. Moore, Rt. 4, Conway, S.C.

Filed Apr. 24, 1969, Ser. No. 827,454
Int. Cl. A01d 45/16
U.S. Cl. 56—27.5 28 Claims

A self-propelled, mechanical tobacco harvester with novel, variable, swath-cutting means, automatic guidance system,

stalk-supporting means, leaf-orienting means and variable height containers, the operation station and cutting means

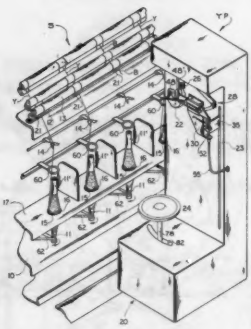


being cantilevered from the harvester frame at a predetermined height.

3,628,320
METHOD AND APPARATUS FOR TRAVELER THREADING

Albert D. Harmon, Clemson, S.C., assignor to Maremont Corporation, Chicago, Ill.

Filed Aug. 1, 1969, Ser. No. 846,681
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **8 Claims**



In the automatic piecing of broken yarn upon a textile spinning frame or like machine of the ring-traveler type, yarn on the bobbin is located, retrieved, and positioned first horizontally above the ring at a predetermined distance thereabove and then at a prescribed low angle relative to the spinning ring to facilitate proper traveler threading and the subsequent resumption of normal spinning operations. Both nonthreading and double-threading of the traveler are prevented.

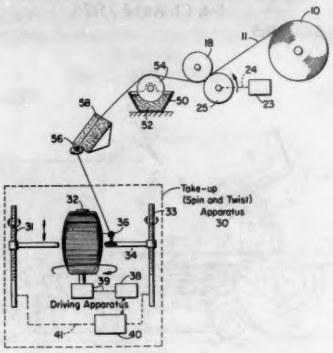
3,628,321
ASBESTOS PROCESSING APPARATUS

Imre Meir Schwartz, 566 Broadway, Paterson, N.J.

Filed Nov. 20, 1969, Ser. No. 878,343
Int. Cl. D02g *3/20, 3/36;* **D07b** *7/14*
U.S. Cl. 57—35 **3 Claims**

Asbestos or like roving (or tape, sliver, or other raw material strand form) is supplied by a metering drive roll to a coating or impregnating station for application of a solution or emulsion. The coated asbestos roving is twisted, and loose and fringe fibers thereof integrally formed into, and secured within the evolving asbestos yarn when the wet material is drawn over a wiping pad.

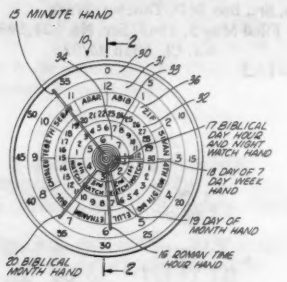
Collection apparatus is employed to twist the material by spinning. The coating, twisting and spinning operations, useful per se, also obviate environmental contamination during the spinning process.



3,628,322
BIBLICAL TIMEPIECE

Samuel E. McDuffee, and Pauline M. McDuffee, both of General Delivery, Wrightwood, Calif.

Filed Apr. 30, 1970, Ser. No. 33,369
Int. Cl. G04b *19/24*
U.S. Cl. 58—4 **3 Claims**


15 MINUTE HAND
17 BIBLICAL DAY HOUR AND NIGHT WATCH HAND
18 DAY OF 7 DAY WEEK HAND
19 DAY OF MONTH HAND
20 BIBLICAL MONTH HAND
16 ROMAN TIME HOUR HAND

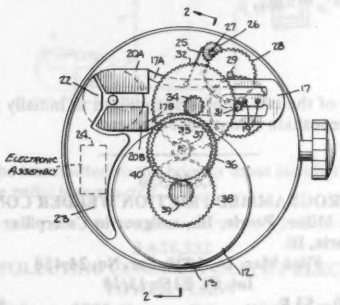
A clock, watch or the like having a dial on which time may be measured by the Roman system and at the same time, time may be measured by the system laid down in the Bible. Roman time is measured by the conventional 12-hour dial which is traversed by a minute hand once each hour and by an hour hand twice for each 24 hours. Biblical time is measured in hours, watches, days of the week, days of the month and months of the year, and the dial of the invention is traversed by a plurality of hands, one of said hands traversing the dial once each hour; another hand once each 12 hours; another hand once each 24 hours, (which are divided into 12 hours of the day and four watches of the night); by another of said hands once each 7 days to continuously designate the current day of a 7-day week; by another of said hands once each month to continuously designate the current day of the month and by another of said hands once each year to continuously designate the current month of the year.

3,628,323

MINIATURIZED ELECTRONIC WATCH

Werner R. Baumgartner, Orpund, and Hans P. Kaufman, Bienne, both of Switzerland, assignors to Bulova Watch Company Inc., New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,819
Claims priority, application Switzerland, Feb. 6, 1969, 1798/69
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 BA 5 Claims



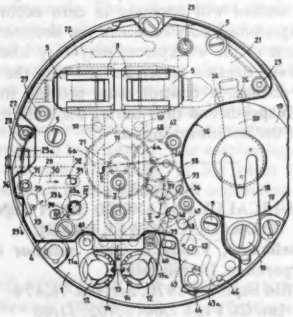
A miniaturized electronic watch in which a tuning fork resonator is sustained in vibration by a transistorized drive circuit energized by a single power cell, the vibratory action being converted into rotary motion to operate a dial train which turns the hands of the watch. The watch movement includes a pillar plate below which the power cell is so positioned that its periphery coincides at one point with the border of the plate, the body of the cell extending to or beyond the geometrical axis of the hands, which axis is normal to the plate. The tuning fork is disposed to one side of the cell below the plate, whereas the dial train is mounted above the cell to provide a highly compact layout.

3,628,324

ELECTRIC TIMEPIECE

Remy Chopard, and Rene Besson, both of Neuchatel, Switzerland, assignors to Ebauches S. A.

Filed Feb. 27, 1970, Ser. No. 15,029
Claims priority, application Switzerland, Mar. 17, 1969, 3926/69
Int. Cl. G04c *3/00*
U.S. Cl. 58—28 D 4 Claims



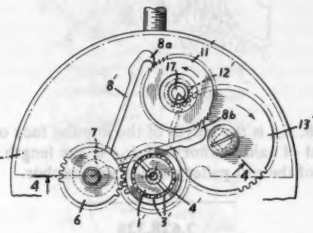
An electric timepiece inclusive of a flexible resonator wherein a vibrating flexible blade drives a ratchet counting wheel in a step-by-step manner through the intermediary of a pawl.

3,628,325

SELF-WINDING WATCH

Katsuhiko Morita, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed June 30, 1969, Ser. No. 837,679
Claims priority, application Japan, July 2, 1968, 43/55817
Int. Cl. G04b *5/02*
U.S. Cl. 58—82 R 2 Claims



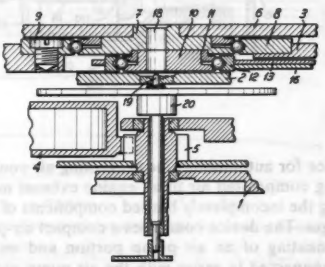
A winding system for a self-winding wrist watch having a driven ratchet wheel for winding a mainspring by driving the ratchet from an oscillatory pawl oscillated by an eccentric axle driven by an oscillating weight and without the use of a conventional bridge element.

3,628,326

AUTOMATICALLY WINDING WATCH

Raymond Polo, La Chaux-de-Fonds, Switzerland, assignor to Fabriques Movado, La Chaux-de-Fonds and Fabriques des montres Zenith S.A., Le Locle, Switzerland

Filed Nov. 21, 1969, Ser. No. 878,842
Claims priority, application Switzerland, Dec. 23, 1968, 19137/68
Int. Cl. G04b *5/02*
U.S. Cl. 58—82 A 2 Claims



An automatically winding watch comprises superimposed first and second ball bearings. The first ball bearing is fixed by its outer race and the inner race is rotatably oscillated by an oscillating mass. The inner race of the second ball bearing is eccentrically mounted in a recess in the inner race of the first ball bearing and the outer race thereof drives a pawl-bearing yoke with an oscillating movement. The two inner races can have a common bore allowing access to a sweep second pivot.

3,628,327

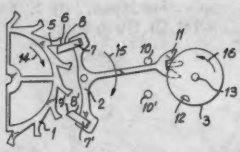
CLUBTOOTH LEVER ESCAPEMENT

Kenji Abe, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Chuo-ku, Tokyo, Japan

Filed Apr. 6, 1970, Ser. No. 25,720
Claims priority, application Japan, Apr. 14, 1969, 44/28481
Int. Cl. G04b *15/00*
U.S. Cl. 58—116 3 Claims

A clubtooth lever escapement with high transmission efficiency having an escapement wheel and an anchor, and

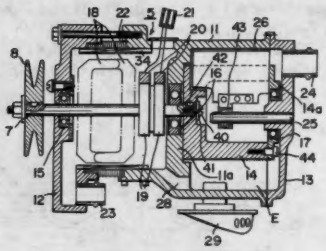
satisfying at least one of 2.0 L_G/L_{AI} 1.0 and 2.0 L_G/L_{AD} 1.0, where L_G is the length of the impulse face of said escape wheel tooth, L_{AI} is the length of the impulse face of the entry pallet jewel of said anchor and L_{AD} is the length of the impulse face of the exit pallet jewel of said anchor.



3,628,328
DEVICE FOR AUTOMOBILES FOR PREVENTING AIR CONTAMINATION

Kenji Matsuzawa, Yokohama, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan

Filed Dec. 2, 1968, Ser. No. 780,502
Claims priority, application Japan, Dec. 6, 1967, 42/78083
Int. Cl. F01n *3/10*; H02k *9/06*
U.S. Cl. 60—30 1 Claim



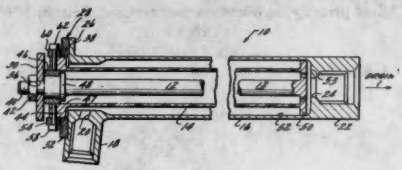
A device for automobiles for preventing air contamination by forcing compressed air to an engine exhaust manifold for reburning the incompletely burned components of the engine exhaust gas. The device comprises a compact air-pump-alternator consisting of an air pump portion and an alternator portion connected in series with the air pump along a common shaft. The air pump delivers compressed air generated thereby into the alternator for cooling. The compressed air, which is heated by cooling the alternator, is forced into the engine exhaust manifold for effectively reburning the incompletely burned components.

3,628,329
GAS TURBINE ENGINE INLET GUIDE VANE ACTUATOR WITH AUTOMATIC RESET

William R. Spencer, Cincinnati, Ohio, assignor to General Electric Company

Filed Feb. 24, 1970, Ser. No. 13,628
Int. Cl. F02c *9/02*
U.S. Cl. 60—39.29 11 Claims

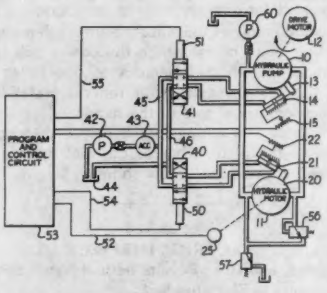
An actuator is described which positions an element upon sensing a parameter and, after a certain time limit has elapsed, automatically repositions the element to its initial position. A central solid rod is surrounded by a thin perforated sleeve constructed of material having the same coefficient of expansion as the rod. The rod and sleeve are rigidly interconnected at one end, and hot gas is passed in a swirling manner along the axis of the actuator. The time differential expansion of the two members is utilized to initially position and then reposition a controlled element.



3,628,330
SPEED-PROGRAMMED FRICTION WELDER CONTROL

Robert G. Miller, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 16, 1970, Ser. No. 24,458
Int. Cl. F15b *15/18*
U.S. Cl. 60—53 R 8 Claims



A drive in a speed-programmed friction welder can be controlled by an electronic loop employing circuits to continuously compare the actual speed of the drive with the programmed speed throughout the weld interval and adjusting the drive so the relative rotational speeds of the parts (workpieces) being welded will decrease to zero according to a prescribed programmed pattern. Since the necessary relative rotational speeds of the workpieces may vary when welding stock of different sizes or materials, and also the weld time interval may change, a control must provide independent control of both speeds and time during the weld cycle which are features of the instant invention.

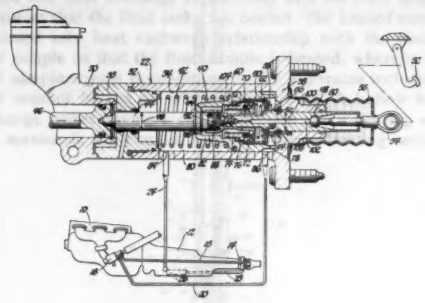
3,628,331
HYDRAULICALLY BALANCED OPEN CENTER HYDRAULIC POWER BRAKE

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 29, 1970, Ser. No. 76,474
Int. Cl. F15b *7/00*, *13/02*, *11/08*
U.S. Cl. 60—54.6 P 2 Claims

A hydraulic power brake booster in a vehicle hydraulic system in which a pump supplies fluid to the power steering gear of the vehicle and then to the brake booster, after which the fluid is returned to the pump. The booster has an open

center control valve and is provided with a hydraulic balance so that back pressure generated downstream of the booster



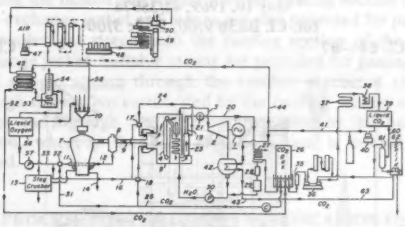
will not be transmitted to the booster input member to which the brake pedal is connected.

3,628,332

NONPOLLUTING CONSTANT OUTPUT ELECTRIC POWER PLANT

John J. Kelmar, 2205 Cypress Drive, White Oak Borough, Pa.

Filed Apr. 16, 1970, Ser. No. 29,061
Int. Cl. F22b *35/00*; F01b *27/00*
U.S. Cl. 60—105 **13 Claims**



Oxygen is delivered to a gas producer to gasify coal to produce fuel which is then delivered with more oxygen to a boiler furnace to generate steam and to form products of combustion that include water vapor and carbon dioxide. The water vapor is condensed and separated from the carbon dioxide. The steam is conducted to a steam turbine at a rate that enables it to operate the plant at substantially full capacity continuously. The turbine drives an electric generator. During periods of reduced load, surplus power from the plant is used for liquefying some of the separated carbon dioxide. Some of the surplus power also is used for operating air separation apparatus, to which the liquefied carbon dioxide is conducted to aid in producing liquid oxygen in excess of the oxygen requirements of the gas producer and furnace during the reduced load period. The surplus liquid oxygen is stored for use, after warming, in the plant between the periods of reduced load when the air separation apparatus is not operating.

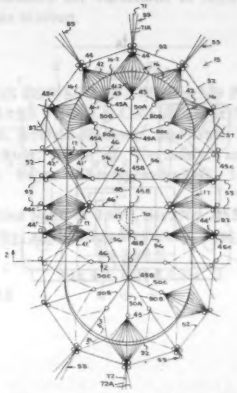
3,628,333

FLOATING CONTAMINANT CONSTRAINING FENCE

Eugene W. Newton, 5804 Berkeley Ave., Baltimore, Md.

Filed June 26, 1970, Ser. No. 50,170
Int. Cl. E02b *15/04*; C02c *1/38*
U.S. Cl. 61—1 **23 Claims**

A floating contaminant constraining fence structure wherein the fence is assembled from a plurality of modular fence sections to enclose at least part of a selected water surface area, each of the fence sections including vertically elongated strut members having buoyant devices to support them at a selected level in the water, stringers connecting the tops and bottoms of the strut members and plural sets of har-



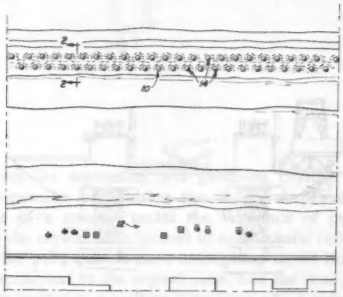
ness ropes for supporting the modular fence sections in a desired arrangement, together with a cloth web extending above and below the water level supported by the stringers. The method of laying out such a floating fence structure, and settling tank structure usable therewith are also disclosed.

3,628,334

FLOATING BREAKWATER

Arthur J. Coleman, 1841 N.E. 42nd St., Pompano Beach, Fla.

Filed July 31, 1969, Ser. No. 846,372
Int. Cl. E02b *3/06*
U.S. Cl. 61—5 **8 Claims**



A series of hollow rigid spherical floats anchored in an offshore grouping so as to act in the manner of a breakwater for breaking up and smoothing wave action. Each of the floats is anchored to the bottom by a flexible cable and, through internal ballast, rides partially submerged in the water.

3,628,335

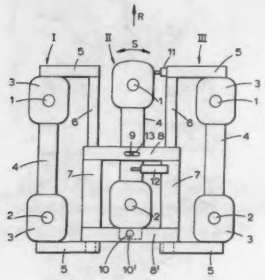
SUPPORT ASSEMBLIES FOR MINERAL MINES

Heinrich Behr, Altlunen, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Bei Lunen, Westfalia, Germany

Filed May 7, 1969, Ser. No. 822,586
Claims priority, application Germany, Oct. 12, 1968, P 18 02 886.9
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **5 Claims**

A support assembly for mineral mines having three frames each having a resilient floor rail a roof bar and several telescopic props therebetween.

The frames are interconnected by two shifting units which effect successive advancement of the central frame in relation to the outer frames and vice versa. The shifting units are linked by resilient transverse elements and the central frame is so mounted on one of the elements that when desired it can pivot in relation to the outer frames either inherently in operation or under the action of separate adjusting units.

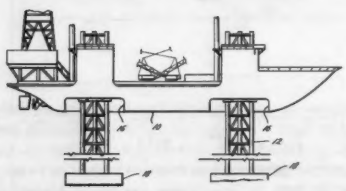


3,628,336

DRILLING PLATFORM

William H. Moore; George T. Richardson, and Floyd T. Pease, all of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Filed Apr. 28, 1969, Ser. No. 819,623
Int. Cl. E02b *17/00*
U.S. Cl. 61—46.5 **11 Claims**



A floating vessel suitable as a drilling platform in which the vessel has legs extending therethrough which in their upper position are tightly held by the vessel and each leg includes a footing which can be secured thereto or to the vessel when the legs are lowered to raise the vessel into operating position to provide the lower end of the legs with an extended bearing surface for engagement with the bottom.

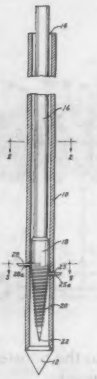
3,628,337

ANCHORABLE PILE

Fred C. Stepanich, c/o CDM P.O. Box 2-55, Bangkok, Thailand, and Thomas L. Adams, C. M. Upham Int'l, c/o OTCC/Thialand, APO San Francisco, Calif.

Filed Sept. 26, 1969, Ser. No. 861,368
Int. Cl. E02d *5/54, 5/80*
U.S. Cl. 61—53.68 **10 Claims**

A piling consisting of a main, elongated pile member which has within its body, a plurality of retracted anchors which after the pile is inserted into the ground, are capable of being independently moved laterally of the piling member to provide anchors for the piling member without movement of the piling member.

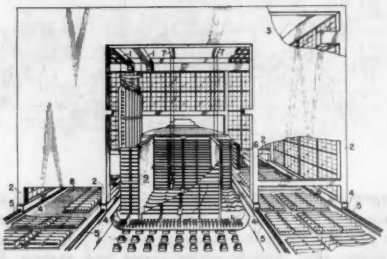


3,628,338

SHIPBUILDING DEVICE

Kiyoshi Terai; Tatsumi Kurioka; Hideshi Takeuchi, and Zirou Nakao, all of Hoyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hoyogo, Japan

Filed Sept. 16, 1969, Ser. No. 858,425
Claims priority, application Japan, Sept. 21, 1968, 43/68426; May 10, 1969, 44/35974
Int. Cl. B63b *9/00;* **B63c** *3/00*
U.S. Cl. 61—67 **3 Claims**



A movable building structure surrounds a ship during its construction and is composed of a front frame and a rear frame each including pillar members supporting the building structure which spans across rails, one or more of which are laid on both sides of a building dock building the ship and also to one side of an area accommodating surface plates for assembling parts of the ship structure. The front and rear frames are combined into a boxlike construction and a plurality of overhead traveling cranes are supported inside of the building structure by the frames and pillars. The whole building structure rests on wheels or rollers which rotate on the rails, allowing the building structure to be moved along the rails in accordance with the progress of the shipbuilding works by a hydraulic winch.

3,628,339

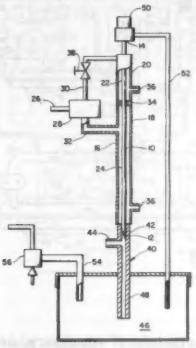
FLUID SAMPLE STREAM CONDITIONING

Joe A. Porter, Whittier, Calif., assignor to Beckman Instruments, Inc.

Filed Jan. 27, 1970, Ser. No. 6,058
Int. Cl. F25b *9/02*
U.S. Cl. 62—5 **17 Claims**

The instant disclosure relates to apparatus for and a method of conditioning a fluid sample stream, for example,

for passage through an analytical instrument. The method involves passing a gas under pressure into a vortex tube so that the gas separates into two exit streams from the vortex tube, a heated stream and a cooled stream. The cooled stream is passed into heat exchange relationship with the fluid sample stream so that the fluid sample is cooled. The heated stream is passed into heat exchange relationship with the cooled fluid sample so that the fluid sample is heated, whereby the fluid sample stream is conditioned. The apparatus includes a fluid conduit having an inlet and an outlet. A hollow heat exchange jacket having a cooling section and a heating section surrounds the conduit so as to form a heating section



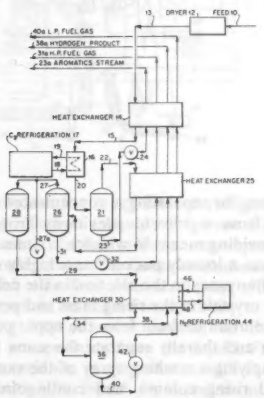
and a cooling section in the conduit. Means are provided for introducing a gas under pressure into a vortex tube so that the gas separates into two exit streams from the vortex tube, a heated stream and a cooled stream. Means are provided for passing the heated gas stream into the heating section of the heat exchange jacket and means are also provided for passing the cooled gas stream into the cooling section of the heat exchange jacket. Suitable means are provided for passing the fluid sample stream through the conduit so that it travels through the section surrounded by the cooling section of the jacket and through the section surrounded by the heating section, whereby the fluid sample stream is cooled and heated.

3,628,340

PROCESS FOR CRYOGENIC PURIFICATION OF HYDROGEN

Joseph Meisler, Teaneck, N.J.; Edward Harold Van Baush, Pearl River, and Gregory Christ Banikiotes, Seaford, both of N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,294
Int. Cl. F25j *3/00, 3/06, 3/08*
U.S. Cl. 62—18 **2 Claims**



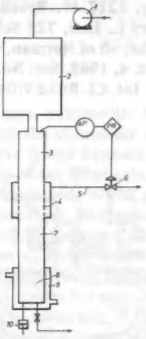
A process for separating condensable contaminants such as methane from a crude hydrogen stream utilizing a series of multipass heat exchangers through which the gas flows for stepwise cooling, with interstage separation of condensates which are expanded and passed in a reverse flow path for autogenous refrigeration. Supplemental refrigeration is provided for the last cooling stage to maintain the plant in proper heat balance for variations in feed gas composition and to facilitate startup.

3,628,341

PROCESS FOR SEPARATING AND PURIFYING CRYSTALS FROM A CRYSTAL SUSPENSION

Gunther Klotz, Krefeld-Bockum, and Hans Helmut Schwarz, Krefeld-Bockum, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 4, 1969, Ser. No. 855,229
Claims priority, application Germany, Sept. 21, 1968, P 17 94 202.8
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **3 Claims**



A process for separating and purifying crystals from a crystal suspension by filtering the crystal suspension in a filter zone of a column under the influence of pulsation, delivering the crystal cake formed to an adiabatic reflux zone in which the pure melt is used as washing liquid flowing in the countercurrent to the crystal cake, and the thus-purified crystals are melted in a melting zone from which some of the melt is run off as the end product and some is used as the washing liquid. The pressure surges are measured above the filtration zone and used to regulate the quantity in which the mother liquor runs off and hence to regulate the entire sequence of operations in the column.

3,628,342

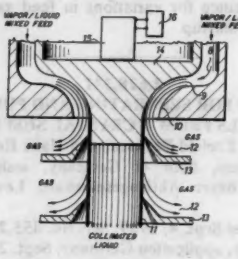
METHOD AND DEVICE FOR THE GENERATION OF BEAMS OF MATTER WITH SHARP SPATIAL COLLIMATION

Erwin Willy Becker, Karlsruhe-Durlach, Germany, assignor to Gesellschaft Fur Kernforschung mbH, Karlsruhe, Germany

Filed Nov. 17, 1967, Ser. No. 684,054
Claims priority, application Germany, Nov. 25, 1966, G 48553
Int. Cl. F25j *3/06*
U.S. Cl. 62—23 **6 Claims**

Formation of sharply collimated plasma beam by bending a stream produced by expanding a gas out of a nozzle contain-

ing condensed and noncondensed components; separating the bent stream into its components; and feeding the condensed components into a vacuum chamber in collimated form.

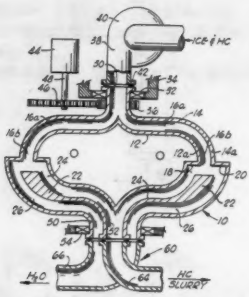


3,628,343

METHOD FOR ROTATIONAL ENERGY EXCHANGE CRYSTALLIZATION AND MATERIAL SEPARATION

Harold M. Bradbury, 1217 W. Brooks; Robert I. Loeffler, 1200 Caddell; Jerry L. Lott, 725 Schulze St., and Billy L. Thomas, 510 Sunrise, all of Norman, Okla.

Filed Oct. 4, 1968, Ser. No. 765,211
Int. Cl. B01d 9/04
U.S. Cl. 62—58 **12 Claims**



A process and apparatus for effecting exchange crystallization and component separation in a nongaseous mixture by subjecting the mixture to compressional and centrifugal forces. The apparatus employed includes a mixture confining chamber, structure for moving this chamber through a curvilinear path so that an acceleration producing force acts on the mixture tending to change its direction of movement toward a barrier wall of the chamber, a mixture conveyance system for conveying the mixture to the chamber, and discharge ducts or passageways for removing one part of the mixture from a location relatively near the barrier wall, and another part of the mixture from a location relatively remote from the barrier wall.

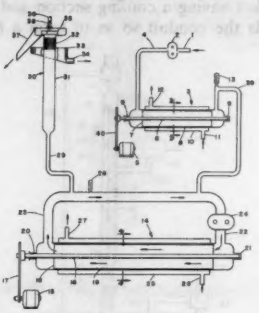
3,628,344

APPARATUS AND METHOD FOR CONCENTRATION OF LIQUID BEARING SOLIDS BY FREEZING

Alfred T. King, 615 York Ave., Lansdale, Pa.

Filed Feb. 17, 1969, Ser. No. 799,714
Int. Cl. B01d 9/00
U.S. Cl. 62—58 **7 Claims**

Apparatus and process concentrating the solids content of a solids-containing solution or suspension by forming seed crystals of the vehicle or solvent and, by accurately controlled refrigeration and circulation of such solution, promoting growth of said seed crystals into larger crystals, and separating the concentrated solute from such larger crystals by causing a column of said crystals to rise, while the circulation system is closed to the atmosphere, and draining the concentrated solute from said rising column of crystals while gently washing the crystals, if necessary, and removing the ice crystals and concentrated solute separately from the system. While useful in other fields, the invention is especially adapted to making beverage concentrates such as coffee, tea, fruit juices and the like.

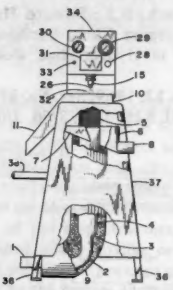


3,628,345

ICE-LIQUID SEPARATION COLUMN

Alfred T. King, 614 York St., Lansdale, Pa.

Continuation-in-part of application Ser. No. 799,653, Feb. 17, 1969, now abandoned. This application Aug. 19, 1970, Ser. No. 65,314
Int. Cl. B01d 9/04
U.S. Cl. 62—123 **6 Claims**

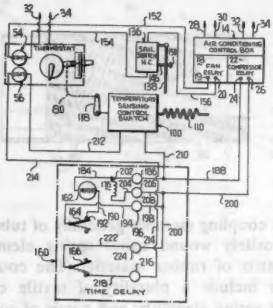


Mechanism for separating a concentrated solution of soluble solids from a solvent previously frozen into crystals thereof, providing means in which a column of the crystals is arranged into a loosely packed mass highly capable of rising by natural buoyancy in the solution in the column while holding smaller crystals in the rising mass and permitting the concentrated solution to drain from the upper portion of said rising column and thereby separate the same from said frozen crystals, applying a washing spray of the same solvent to the top of said rising column, and continuously removing the washed crystals from the top of said column of crystals to permit the column to continue to rise while draining concentrated solution therefrom.

3,628,346
APPARATUS FOR INDICATING THERMAL AND AIR VELOCITY CONDITIONS OF AIR IN THE PLENUM OF A CENTRAL AIR-CONDITIONING SYSTEM

Cecil G. Lagrone, Jr., 2002 Belle Grove Drive, Bossier City, La.

Filed Oct. 21, 1970, Ser. No. 82,560
Int. Cl. F25b *49/00*
U.S. Cl. 62—126 8 Claims

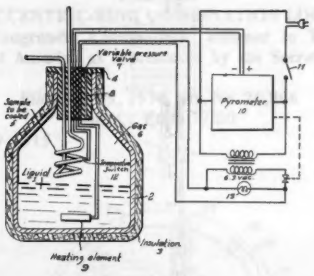


Thermal and air velocity responsive electrical switch means disposed in the plenum of a central air-conditioning system and electrically connected in a signal system, the apparatus being operable to actuate indicating or signal means calling attention to fan and/or motor-compressor malfunction or failure.

3,628,347
REFRIGERATING VAPOR BATH

Lawrence J. Puckett, Churchville; Marion Warfield Teague, Aberdeen, and Donald G. McCoy, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the United States Army

Filed Apr. 13, 1970, Ser. No. 27,928
Int. Cl. F25b *41/00*
U.S. Cl. 62—208 1 Claim

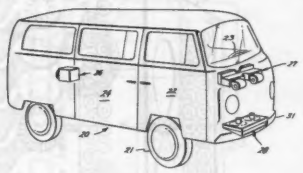


In the laboratory, or for other limited refrigeration purposes, the cooling effect of a liquid refrigerant may be used for a limited period of time without recompressing and reliquifying the refrigerant. The present disclosure teaches how to accomplish this feat with maximum efficiency by placing the specimen to be cooled in proximity to the liquid, thereby permitting heat transfer directly to the gaseous refrigerant which is vaporizing from the liquid. Further, the rate of cooling is variable, in accordance with the need for cooling, by warming the liquid to vaporize more liquid, thereby increasing the vapor density above the liquid. With greater vapor density (or, we might say, by making the fog thicker) the heat exchange rate (cooling rate) is increased. Conversely, when heat is not supplied to the liquid, and the vapor density is decreased, the rate of heat exchange (cooling rate) is decreased. The rate of cooling, and the minimum temperature obtainable, may be varied further by adjustable pressure relief means to control the "boiling" point of the refrigerant. Vacuum may be applied to the container if desired to lower the boiling point even lower to achieve a lower temperature.

3,628,348
AUTOMOBILE AIR CONDITIONING SYSTEM

Don P. Dixon, 4926 Space Center Drive, San Antonio, Tex.

Original application Mar. 11, 1968, Ser. No. 712,216, now Patent No. 3,494,540. Divided and this application Feb. 9, 1970, Ser. No. 9,781
Int. Cl. B60h *3/04*
U.S. Cl. 62—241 7 Claims

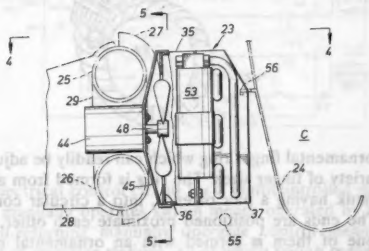


A bus-type Volkswagen automobile having an air conditioning system in which the condenser assembly is mounted on the underside of the frame beneath the passenger compartment and forwardly of the front axle, and the compressor is mounted on the left hand side of the motor in a rear compartment of the automobile. The condenser assembly includes a relatively thin coil arranged with its wide faces extending horizontally, an air scoop beneath the coil, a shroud providing an enclosed space above the coil, a fan for drawing air from the space, and means for supporting the coil, scoop, shroud, and fan from the underside of the floor board of the automobile. The compressor is supported on a bracket which is connected to the motor by existing parts which connect the distributor bracket and a heat exchanger conduit to the engine block and a sheet metal covering to the cylinder head. A "1600" Series type Volkswagen having an air conditioning system in which the compressor is connected to the crankshaft by a pulley adapted to be connected to the crankshaft by the same bolt which connects a pulley thereto for driving the generator.

3,628,349
AUTOMOBILE AIR CONDITIONING SYSTEM

Don P. Dixon, 4926 Space Center Drive, San Antonio, Tex.

Filed June 29, 1970, Ser. No. 50,653
Int. Cl. B60h *3/04*
U.S. Cl. 62—243 3 Claims



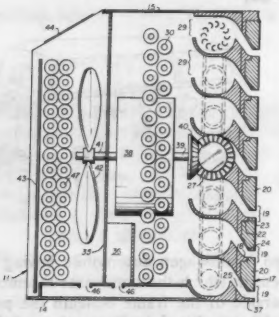
An air conditioning system for a "bug"-type Volkswagen automobile including a condenser assembly supported behind

the spare tire compartment by means of bolts which extend into existing tapped holes in the front end of the automobile frame.

ERRATUM

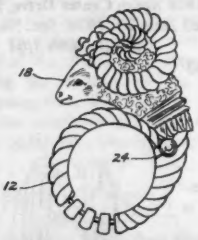
For Class 62—290 see:
Patent No. 3,628,590

3,628,350
WALL AIR CONDITIONER
Samuel M. Ruth, 226 South Burnet St., East Orange, N.J.
Filed June 22, 1970, Ser. No. 48,309
Int. Cl. F25d *17/06*
U.S. Cl. 62—429 **10 Claims**



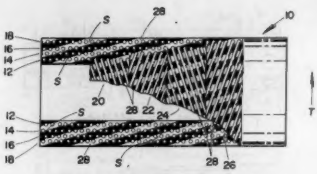
A wall air conditioner having an external face simulating the appearance of the wall in which it is mounted, the face having a plurality of spaced apart, horizontal openings melding with the external face, each opening connecting to the inlet side of an elongated rotary air compressor, the air compressor being interconnected to a single drive source, the drive source also driving a plurality of air compressors for external makeup air and a single air compressor for evaporator circulation.

3,628,351
RING MANUALLY ADJUSTABLE TO A PLURALITY OF CONSTANT SIZES
Michael Chernow, New York, N.Y., assignor to Monocraft, Inc.
Filed Oct. 24, 1969, Ser. No. 869,278
Int. Cl. A44c *9/02*
U.S. Cl. 63—15.5 **7 Claims**



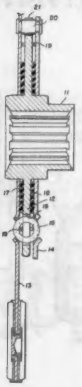
An ornamental finger ring which can readily be adjusted to fit a variety of finger sizes. The ring is formed from an elongate shank having a pair of ends, into a circular configuration. The ends are positioned proximate each other, and at least one of them is formed with an ornamental member thereon. A flexible insert is embedded in a portion of the shank, and at least one gap or spacing is provided in the shank so that it surrounds the insert and divides the shank into at least two segments.

3,628,352
FLEXIBLE COUPLING
Robert E. Stuemky, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed July 9, 1970, Ser. No. 53,369
Int. Cl. F16d *3/52*
U.S. Cl. 64—15 C **12 Claims**



A flexible coupling member generally of tubular shape and having oppositely wound spiral spring elements disposed within a matrix of rubber material. The coupling member may further include a plurality of textile cords disposed between the spring elements; and a pair of concentric annular sleeves sandwiching and bonded to the rubber matrix at each end of the coupling member. End caps are fitted to each end of the coupling member by either displacing a portion of the coupling member into concavities of the end caps, or by mechanically joining the sleeves of the coupling member to the end caps.

3,628,353
DAMPER ASSEMBLY FOR DRIVE TRAIN
Jack W. Armstrong, Baldwinsville, N.Y., assignor to Lipe Rollway Corporation, Liverpool, N.Y.
Filed Sept. 8, 1969, Ser. No. 856,031
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 F **10 Claims**



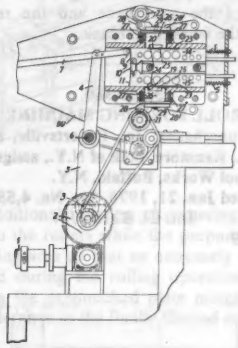
Driving and driven members of a drive train are arranged as plates astraddle a flange with springs arranged between the plates to engage the flange for resisting angular displacement between the plates and the flange. Elastomeric annuli are compressed between the plates and the faces of the flange with sufficient force to maintain a nonslip engagement with these parts as viscoelastic deformation of the annuli dampens the smaller of the angular displacement. The compressive force on the annuli is insufficient to prevent slipping of the annuli for larger angular displacements to prevent destruction of the annuli.

3,628,354

MEANS FOR CONTROLLING GUIDE BARS IN WARP KNITTING MACHINES

Roy Farwell, Derbyshire, England, assignor to Clutsom-Penn International Limited, Highfields, Coalville, Leicestershire, England

Filed May 8, 1970, Ser. No. 35,820
Claims priority, application Great Britain, May 27, 1969, 26,611/69
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 16 Claims



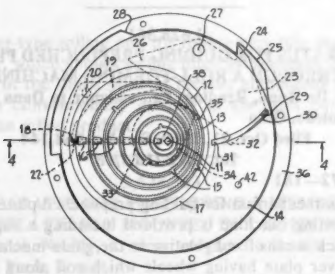
A mechanism controlling longitudinal movements of guide bars in a warp knitting machine. It separates selections of such movements to the extents of different needle spacings from the driving influence effecting the same. The mechanism comprises, for each guide bar, (a) a driving unit incorporating not only slides profiled to provide a cam face and operable to vary the latter but also a continuously driveable radius lever with a follower for following the cam face and transmitting required movements to the guide bar; and (b) a separate program unit outputs from which effect movements of the slides to vary the profile of the cam face. (a) functions to move the guide bar only after (b) has determined the extent and direction of such movement.

3,628,355

ECCENTRIC-RING COMBINATION LOCK

Roy A. Zangrando, Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 9, 1970, Ser. No. 70,806
Int. Cl. E05b *37/00*
U.S. Cl. 70—315 12 Claims



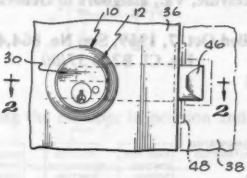
A combination lock having an outer operating dial connected through a dial shaft with an internal coding mechanism comprising a number of rotatable eccentric code rings placed successively radially about each other in the same plane and connected with the dial shaft. Rotation of the dial according to a coded combination effects rotation of the rings to positions in which the widest portions are in radial alignment. The eccentricity of the mechanism is then maximum with the outer ring at a maximum distance from the shaft. At this point contact is made with a separate unlocking or output mechanism to trigger it into locking connection with the dial shaft for unlocking operation by the dial.

3,628,356

DOOR LOCK PROTECTION DEVICE

George L. Deahl, 836 North Hollywood Way, Burbank, Calif.

Filed Apr. 22, 1970, Ser. No. 30,920
Int. Cl. E05b *9/04, 15/02*
U.S. Cl. 70—449 4 Claims



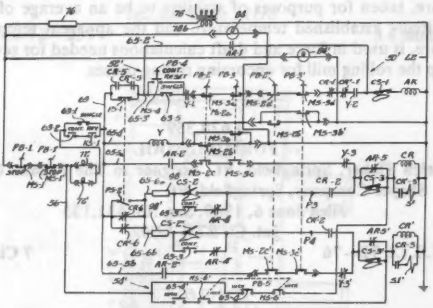
An escutcheon which surrounds and centers the cylinder in a door lock and has integrally formed therewith a tubular securement cylinder which extends through the lock hole in the door. The tubular securement cylinder has a transverse hole through at least one wall. This transverse hole is in alignment with the latch housing and intersects the cylinder axis so that the latch housing extends through the securement cylinder wall to prevent rotation and removal of the escutcheon and securement cylinder and prevent burglar access to the latch.

3,628,357

SAFETY CONTROL CIRCUIT FOR PRESSES AND THE LIKE

Kurt K. Luenser, De Sota, Tex., assignor to Verson Allsteel Press Company, Chicago, Ill.

Filed Nov. 14, 1969, Ser. No. 876,672
Int. Cl. B21j *9/20*
U.S. Cl. 72—6 44 Claims



An electrical control circuit for a multicontrolled machine having manually operates switch means operated by respective self-returning manually operable control means at a number of operator stations, all of which switch means must be operated at the same time to initiate movement of a work producing portion of the machine. The manually operated switch means includes normally open switches in a drive con-

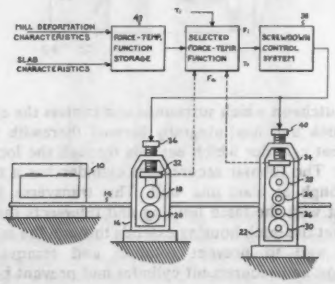
trol relay circuit and normally closed switches connected in parallel between a manually controlled relay and a source of power so that the manually controlled relay cannot be deenergized until all of the normally closed switches are opened and will not become deenergized until all of the normally closed switches have been closed. The manually controlled relay operates normally closed switch means in the drive control relay circuit, and normally closed switch means in an antirepeat relay circuit which prepares the drive control relay circuit for energization by closure of all of the normally open manually operated switch means.

3,628,358

METHOD OF REVISING WORKPIECE TEMPERATURE ESTIMATES OR MEASUREMENTS USING WORKPIECE DEFORMATION BEHAVIOR

Donald J. Fapiano, Schenectady, N.Y., and Allyn S. Norton, Jr., Charlottesville, Va., assignors to General Electric Company

Filed Oct. 7, 1969, Ser. No. 864,414
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 4 Claims



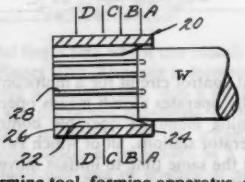
For use in setting up a rolling mill, a method of revising an estimate or measurement of workpiece temperature based on prior deformation behavior of the workpiece. According to the method, roll forces are expressed as functions of workpiece temperatures for different rolling conditions. Prior to a rolling pass during which a revised temperature is to be established, one of these functions is selected on the basis of anticipated rolling conditions. Using an initially established temperature, the selected function yields a predicted roll force value. When the rolling pass is executed, a measured roll force value is used with the selected function to establish an apparent workpiece temperature. The revised temperature, taken for purposes of stability to be an average of the initially established temperature and the apparent temperature, is used in force and draft calculations needed for setting up the rolling mill for upcoming rolling passes.

3,628,359

FORMING TOOL

Erich Tlaker, Springfield, Vt., assignor to The Fellows Gear Shaper Company, Springfield, Vt.

Filed June 6, 1969, Ser. No. 831,133
Int. Cl. B21j *13/02*
U.S. Cl. 72—76 7 Claims



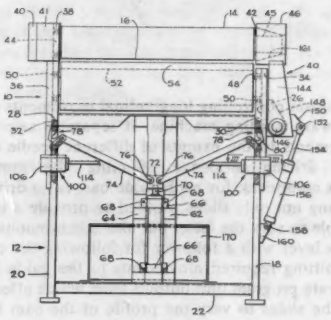
A flex ring forming tool, forming apparatus, and method of cold-forming a profiled workpiece through radial material flow is disclosed wherein the flex ring has an internal profile complementary to the profile of the finished workpiece and wherein the lands of the flex ring forming profiles have uniform, relatively narrow widths from the minimum depth leading ends to the maximum depth trailing ends of the profiles while the widths of the forming profiles at a given radial distance from the center of the flex ring gradually increases from their leading to their trailing ends. The flex ring is deflected inwardly to penetrate the workpiece blank as the workpiece is fed therethrough with the feed of the workpiece and the flexing of the ring by the apparatus being coordinated so that the workpiece is progressively formed into the desired profile by the straining of localized circumferential areas of the workpiece and the resulting radial material flow in the workpiece blank.

3,628,360

ROLL FORMING MACHINE

Frederick E. Munschauer, Jr., Eggertsville, and George H. Trautman, Jr., Kenmore, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,554
Int. Cl. B21d *5/14*
U.S. Cl. 72—169 2 Claims



A roll forming machine comprising a pair of rolls between which sheet material is fed and bent to arcuate form. The upper drive roll is a rigid steel roll rotated by a hydraulic motor and the lower roll is of a compressible material such as polyurethane and is driven from the upper roll by the relative movement of the workpiece therethrough. A drop-end member is pivoted at its lower end about an axis located slightly below the periphery of the lower roll for movement in an arcuate path toward and away from the roll. A bearing block is provided at the upper end of the drop-end member for engagement with the free end of the upper roll for rotatably supporting the same.

3,628,361

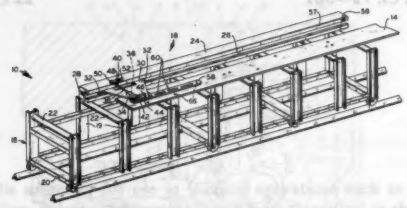
APPARATUS FOR GUIDING PREPUNCHED PLATES THROUGH A ROLL-FORMING MACHINE

James L. De Rupa, Reading, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 21, 1969, Ser. No. 868,144
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 7 Claims

A guide mechanism for guiding prepunched plates through a roll-forming machine is provided including a support and guide track means fixed relative to the guide mechanism and a cantilever plate having wheels which roll along the guide track means, the said cantilever plate including a gravity operated latch dog which engages in a slot in a guide bar. The guide bar, in turn, is positively positioned relative to the prepunched plate by the insertion of pins through some of the perforated holes in the plate and corresponding holes in

the guide bar. The cantilever plate disengages from the guide bar upon the perforated plate reaching the end of the guide mechanism through the functioning of a cam plate which lifts a latch nose from the slot in the guide bar, thus permitting the perforated plate and attached guide bar to continue through the rolls of the roll-forming machine. The guide bar



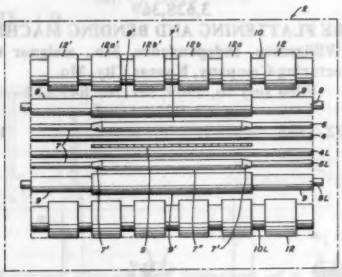
provides the additional function of centering the perforated plate relative to the rollers while the prepunched plate is in the roller forming area so that an extremely close tolerance can be reached during the rolling operation and the perforated holes in the prepunched plate maintained within ± 0.030 inches tolerance in the finally formed structural shape.

3,628,362

MILL FOR ROLLING A THIN, FLAT PRODUCT

John James Stone, Marengo, Ill., assignor to The Arnold Engineering Company, Marengo, Ill.

Filed Mar. 25, 1969, Ser. No. 810,278
Int. Cl. B21b *29/00*
U.S. Cl. 72—242 **5 Claims**



A cluster-type rolling mill for rolling very thin sheet, strip or the like, which applies rolling force substantially over only the width of the rolled product thereby eliminating roll flexing forces conventionally existing in the rolls outside the width of the rolled product.

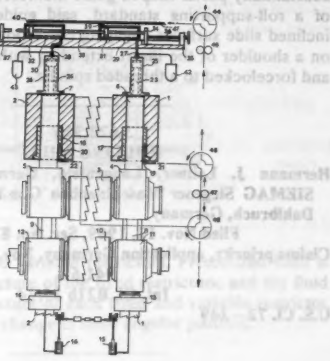
3,628,363

APPARATUS FOR POSITIONING A MEMBER DISPLACEABLY MOUNTED IN A HOUSING

Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France

Filed Feb. 20, 1969, Ser. No. 801,108
Claims priority, application France, Feb. 20, 1968, 140561
Int. Cl. B21b *31/32*
U.S. Cl. 72—245 **5 Claims**

Apparatus for positioning a member, displaceably mounted in a housing, comprising two oppositely acting controllable pressure devices and a third controllable pressure device



capable of locking the member in position and releasing the member.

3,628,364

METHOD FOR HOT ROLLING PLATE

Lloyd J. Fenstermaker, Baldwin Borough, Pa., assignor to United States Steel Corporation

Filed May 8, 1970, Ser. No. 35,911
Int. Cl. B21b *1/22, 39/14*
U.S. Cl. 72—227 **5 Claims**

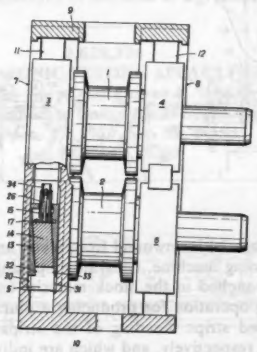
In the method of hot rolling steel plate, the leading edge of the plate emerging from the roll is turned slightly, to prevent undesirable jamming against objects and the ensuing cobble. This slight turn in the edge is effected toward the larger roll when the ratio of the diameters of the rolls is between about 1.0015 to 1.007.

3,628,365

DEVICE FOR THE AXIAL ADJUSTMENT OF ROLLS, PARTICULARLY GROOVED ROLLS

Ernst Hinterholzl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 24, 1969, Ser. No. 844,338
Claims priority, application Austria, Apr. 23, 1969, A 3914/69
Int. Cl. B21b *31/18*
U.S. Cl. 72—237 **8 Claims**



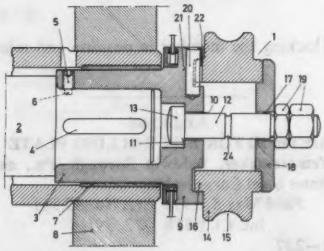
A device for the axial adjustment of rolls, particularly grooved rolls, which are displaceably supported with the aid

of inserts in the frame of a rolling stand, comprises, for axial adjustment of one roll together with its inserts, one or two substantially portal-shaped guide members arranged in a slot of a roll-supporting standard, said guide members having inclined slide surfaces engaging corresponding slide surfaces on a shoulder of the insert extending with play into said slot and forcelocked to a threaded spindle.

3,628,366
ROLLING MILL

Hermann J. Leitner, Langenfeld, Germany, assignor to SIEMAG Siegener Maschinenbau G.m.b.H., Hilchenbach-Dahlbruch, Germany

Filed Nov. 12, 1969, Ser. No. 875,703
Claims priority, application Germany, Nov. 26, 1968, P 18 10 941.6
Int. Cl. B21b *35/14*
U.S. Cl. 72—249 **10 Claims**

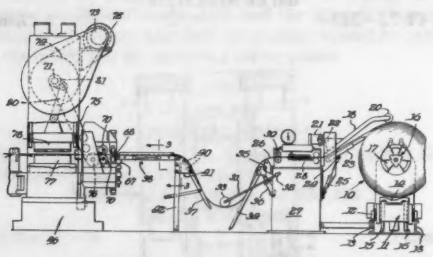


This invention relates to a rolling mill and, more particularly, to the construction of a cantilever-supported roll having means for disconnecting the roll drive in the event of an overload in the mill.

3,628,367
SCROLL CUTTING AND SLITTING MACHINE WITH TENSION CONTROL MEANS

Chester M. Wilg, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Dec. 12, 1969, Ser. No. 884,574
Int. Cl. B21d *43/28*; B26d *7/06*
U.S. Cl. 72—324 **7 Claims**

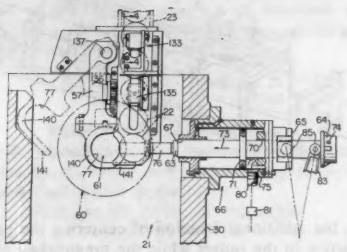


Stock material is unwound from a coil and passed through a straightening machine. Clearance openings and pilot holes are then punched in the stock material as a preliminary to the slitting operation for producing a plurality of individual scroll-shaped strips. Feeding of the strips is continued for each strip, respectively, and which are individually tensioned and wound on respective cylinders. Following the winding operation, the rotation of the supporting mandrel is stopped and the cylinders are removed by a pusher plate having telescoping relation with the mandrel.

3,628,368
WORKPIECE-POSITIONING APPARATUS AND MACHINE USING SAME

Daniel S. Cvacho, Chesterfield County; John J. Duss, Jr., Henrico County, and Harry W. Lee, Jr., Chesterfield County, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sept. 18, 1969, Ser. No. 858,994
Int. Cl. B21d *43/04*
U.S. Cl. 72—361 **22 Claims**

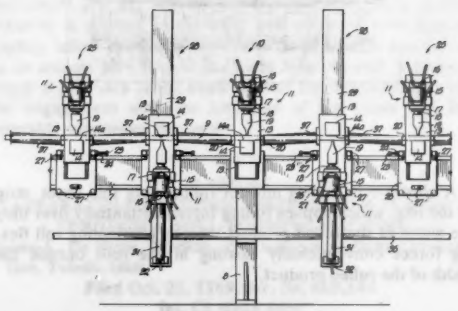


An apparatus for precisely positioning a cup-shaped workpiece or cup into position at a drawing and ironing station of an associated machine. The apparatus utilizes a workpiece-positioning member which is supported for movement toward and away from the station and has a stop provided thereon. A fixed control surface is provided adjacent the positioning member and an actuator is employed to urge the positioning member toward such station causing the positioning member to engage and move the cup into the station to a precise position controlled by a portion of the positioning member engaging the control surface.

3,628,369
TUBE FLATTENING AND BENDING MACHINE

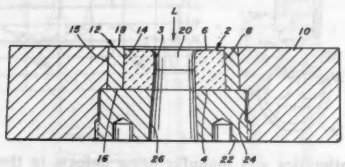
Dan G. Williamson, Independence, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed July 16, 1969, Ser. No. 842,212
Int. Cl. B21d *13/02*
U.S. Cl. 72—385 **12 Claims**



A machine for flattening portions of a straight length of tubing and for bending the tubing into a zigzag shape. Movable outboard stations are mounted by rollers on a rail extending to each side of an immovable central station. Associated with each station is an anvil and hammer assembly to hold, to flatten and to grip a portion of the tubing. A hydraulic cylinder is mounted on alternate outboard stations to move the anvil and hammer assembly in an upwardly direction from the rail, thereby bending the tubing into a zigzag shape.

3,628,370
DIE ASSEMBLY
William H. Phillips, Jr., Northbergen, N.J., assignor to Carmet Company, Pittsburgh, Pa.
Filed Oct. 8, 1969, Ser. No. 864,841
Int. Cl. B21c 3/00
U.S. Cl. 72—467 5 Claims

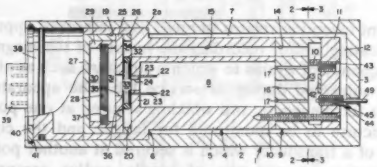


A die assembly for use in forming operations such as hot extruding wherein the forming insert is frustoconical in shape and is cold-pressed into a sleeved support casing with the major base facing the exit side of the assembly and is supported under axial load by a backer bushing affixed to the support casing.

ERRATUM

For Class 72—468 see:
Patent No. 3,628,449

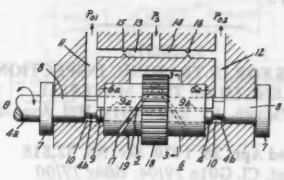
3,628,371
TESTING EXPEDIENT FOR FLUID JET DEFLECTION-TYPE INSTRUMENT
Alvin G. Moore, Cumberland, and Wilfred C. Schuemann, Rawlings Heights, Rawlings, both of Md., assignors to Hercules Incorporated, Wilmington, Del.
Filed June 5, 1969, Ser. No. 830,827
Int. Cl. G01p 21/00
U.S. Cl. 73—1 D 4 Claims



An instrument wherein the deflection of a fluid jet, induced for example by the angular movement of the instrument, produces a signal proportional to the deflection, and particularly a testing expedient in such an instrument for testing the instrument while at rest to determine whether it is functioning correctly, the testing expedient comprising a selectively actuatable means for deflecting the fluid jet a predetermined amount whereby the instrument will, if functioning properly, produce a predetermined output signal.

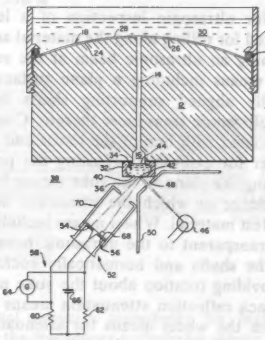
3,628,372
FLUIDIC ANGULAR POSITION SENSOR
Thomas S. Honda, Scotia, N.Y., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 42,292
Int. Cl. G01b 13/00
U.S. Cl. 73—37 10 Claims

The relative angle of a rotary shaft is sensed by a fluidic bridge circuit consisting of a pair of fixed restrictors and a pair of variable restrictors. The variable restrictors are formed by an axial groove in the rotary shaft and a vented, constant pitch, helical groove in a sleeve member surrounding the shaft. The vented point of overlap of the helical groove with respect to the shaft axial groove divides the axial



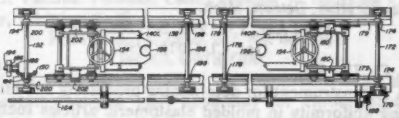
groove into the two variable restrictors. Pressurized fluid is supplied to the juncture of the fixed restrictors, and the fluid pressure at the juncture of each fixed and variable restrictor varies linearly with change in shaft angular position.

3,628,373
PRESSURE-MEASURING SYSTEM
Paul T. Gilbert, Los Altos Hills, Calif., assignor to Beckman Instruments, Inc.
Filed June 29, 1970, Ser. No. 50,462
Int. Cl. G01n 11/00
U.S. Cl. 73—64.3 10 Claims



A pressure-measuring system including a pressure-responsive membrane formed by the interface between two immiscible fluids bounded by the edge of an orifice in a vessel. One of the fluids is a liquid. Means are provided for detecting the position of the membrane in response to a given pressure.

3,628,374
ULTRASONIC TESTING APPARATUS
Helmut F. Laudien, Gary, and Eugene E. Smith, East Gary, both of Ind., assignors to United States Steel Corporation
Filed Jan. 15, 1970, Ser. No. 3,153
Int. Cl. G01n 29/00
U.S. Cl. 73—67.8 10 Claims



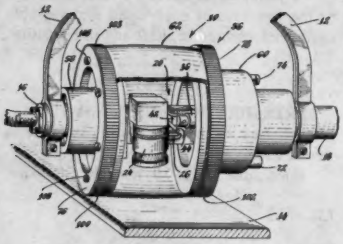
Apparatus for ultrasonically testing a plate includes a pair of spaced-apart rails between which the plate is positioned in

a horizontal plane. A crane mounted on the rails for movement therealong supports a trolley for movement transverse of the rails. The trolley carries a sonic testing wheel which contacts the top of the plate and rolls along the plate as the trolley traverses it.

3,628,375
APPARATUS FOR ULTRASONIC INSPECTION OF A LENGTH OF TEST MATERIAL

Dominick A. Pagano, 91 Strawberry Hill Ave., Stamford, Conn.

Filed Apr. 28, 1970, Ser. No. 32,518
Int. Cl. G01n *29/04;* **H04r** *17/00*
U.S. Cl. 73—71.5 **8 Claims**



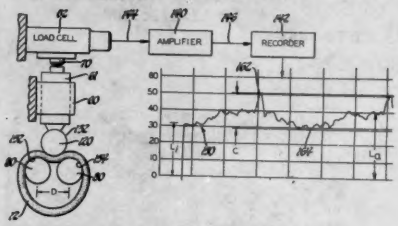
Apparatus for ultrasonic inspection of a length of test material adapted for rolling along the material and capable of adjustably aiming an ultrasonic beam at the material to be tested. Yoke means including a plane surface is disposed between axially aligned supporting shafts for adjustably mounting an ultrasonic transducer thereto. Coaxial coupling means is associated with one of the shafts and connected to said transducer for externally adjusting the position of the transducer along the plane of the yoke means for varying the angle of incidence at which the ultrasonic beam is transmitted to the test material. Wheel means including a cylindrical member transparent to the ultrasonic beam is rotatably mounted to the shafts and hermetically encloses the yoke means for providing rotation about the yoke means and the transducer. Back reflection attenuation means is operatively associated with the wheel means for attenuating unwanted back reflections to eliminate their detection by the transducer. Coupling fluid is retained within the wheel means for fluid coupling the ultrasonic beam to the test material through a portion of the cylindrical member in contact with the test material. Valve means is provided for simultaneously bleeding the wheel means as it is being filled with the coupling fluid to provide simultaneous removal of air therefrom, thereby minimizing the formation of air bubbles within the fluid. Traction means operatively associated with the wheel means provides frictional driving contact with the test material and prevents frictional contact of the end portions of the cylindrical member with the test material.

3,628,376
O-RING TEST INSTRUMENT

Robert L. Dega, Mount Clemens, and Donald J. Mandley, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1970, Ser. No. 27,601
Int. Cl. G01b *5/30*
U.S. Cl. 73—89 **2 Claims**

A test instrument for determining processing and manufacturing uniformity in molded elastomeric articles such as O-rings wherein the O-ring is flexed between two power driven rollers while being loaded at a predetermined deflection by a third roller connected to a load-sensing element. The output of the sensing element is directed to an instrumentation device which records the stress level about the circumference of the O-ring the output variations being indications of inter-

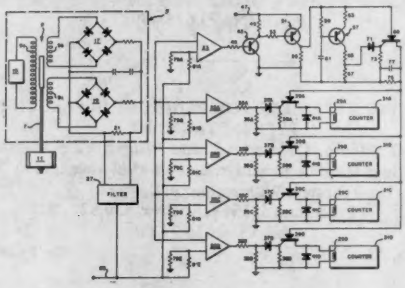


nal discontinuities and manufacturing defects in the tested article.

3,628,377
STRAIN LEVEL COUNTER

David E. Weiss, 1408 Mellon Road, Wyncote, Pa.

Filed July 24, 1969, Ser. No. 844,431
Int. Cl. G01n *3/32*
U.S. Cl. 73—91 **2 Claims**



Present invention relates to novel and improved apparatus for indicating and/or recording the history of the magnitude and frequency of strains to which a structure such as aircraft wing is subjected during its service life. The apparatus includes a ferromagnetic rod which is secured at one point to the structure to be monitored for fatigue and the coil assembly of a transducer which is secured at another point on the structure. Application of tensile and/or compressive strains to the structure varies the axial disposition of the rod in the coil assembly and the electromagnetic coupling between coils of the transducer. The resulting electrical pulses developed by the transducer drive-counting devices through high-gain differential amplifiers provide a record of the number of applied strains that exceed preselected reference levels.

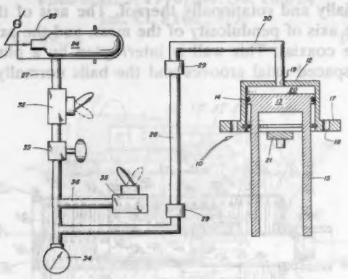
3,628,378
PNEUMATIC PORTABLE DYNAMOMETER

Edgar P. Regan, Jr., Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 16, 1970, Ser. No. 11,530
Int. Cl. G01n *3/10*
U.S. Cl. 73—93 **5 Claims**

A portable pneumatic dynamometer for developing, measuring and applying at a controlled rate both tension and compression-type loads between two movable members. A pressurized gas cartridge is utilized as the power source for which power regulation is provided by a pneumatic toggle switch and a needle valve, for controlling the rate of flow of

the gas, and the movable parts consist of a housing and a piston slidable therein. Suitable attachment hardware is

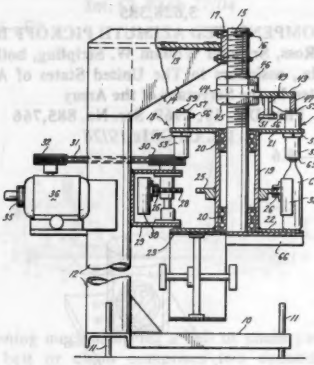


mounted to the housing and the piston for holding test specimens.

3,628,379
CONTAINER COMPRESSIVE LOAD-TESTING APPARATUS

Momir Babunovic, Des Peres, Mo., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed Apr. 20, 1970, Ser. No. 29,993
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 **8 Claims**



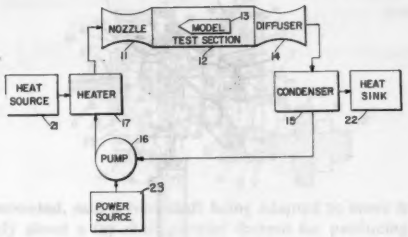
Apparatus for subjecting frangible containers to an axial compressive load for a short period of time to determine the strength thereof and suitability for commercial use. The apparatus comprises a conveyor to properly space containers, register each container with a load-applying head, and prevent the collapse of a container from causing damage to adjacent containers.

3,628,380
LOWER VELOCITY WIND TUNNEL

Charles L. Feldman, 36 Canterbury Drive, Sudbury, Mass.

Filed May 9, 1969, Ser. No. 823,345
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **19 Claims**

A wind tunnel uses a working fluid in which the speed of sound is substantially lower than in air so that vehicles may

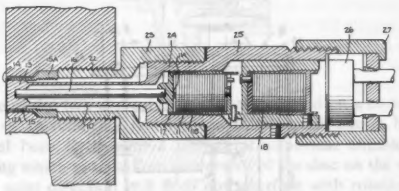


be tested in a relatively low-velocity stream to determine performance when moving relatively much faster in air.

3,628,381
ELECTRICAL PRESSURE TRANSDUCER FOR HIGH-TEMPERATURE FLUID SYSTEMS

Martin L. Aronow, Westbury, and Denis Rehse, Long Island City, both of N.Y., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed July 27, 1970, Ser. No. 58,490
Int. Cl. G01l *9/10*
U.S. Cl. 73—398 R **8 Claims**



An electrical pressure transducer for high-temperature fluid systems, the transducer including a sensor in the form of a hollow column, one end of which is provided with a headpiece, the other end being anchored. The column is inserted in a bore in the wall of a chamber or passage containing the fluid whose pressure is to be measured. The bore is hermetically sealed by a removable nipple having a diaphragm flush with the inner surface of the wall, the headpiece of the column abutting the diaphragm to transmit a compressive load to the column that reduces the longitudinal dimension thereof to an extent proportional to fluid pressure. Attached to the headpiece and disposed coaxially within the column is a rod which is axially displaced as a function of fluid pressure, the motion of the rod being converted into a corresponding electrical value.

3,628,382
AUTOMATIC SEPTUM-CHANGING MECHANISM

Tom H. Vannus, Pomona, Calif., assignor to Hamilton Company, Whittier, Calif.

Filed June 16, 1970, Ser. No. 46,696
Int. Cl. G01n *1/00*
U.S. Cl. 73—422 GC **8 Claims**

A septum-changing inlet apparatus for chromatographs having a ported body and a septum strip moved linearly in successive increments relative to the port of said body to overlie said port with unused or imperforated parts of the septum strip. A septum compression plate movable between a position pressing the septum strip, overlying the port of the

body against the face of the inlet and a septum release position. Fluid pressure actuated means is adapted to move said

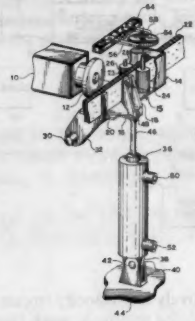


plate and as said plate is actuated or moved, the septum strip is moved linearly.

3,628,383

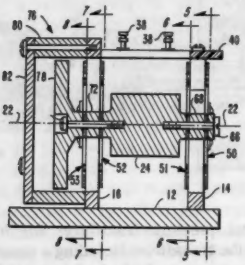
ACCELEROMETER

William A. Tikanen, Reseda, and John H. Hering, Palos Verdes, both of Calif., assignors to Genisco Technology Corporation, Compton, Calif.

Filed Feb. 28, 1969, Ser. No. 803,264

Int. Cl. G01p *15/08*

U.S. Cl. 73—516 **16 Claims**



A compact, air-damped accelerometer useful for aerospace applications is disclosed having a seismic mass limited to rectilinear motion along a predetermined sensing axis by symmetrical cantilever spring suspensions coupled to each end of the mass. Each cantilever suspension includes a pair of springs each having connected inner and outer ring portions. During imposition of accelerations transverse to the sensing axis, the inner portion of one spring and the outer portion of the other spring are subjected to compressive loads that are equal and opposite and therefore cancel so that no deflection error is introduced. The remaining ring portions of the springs are subjected to equal and opposite tensile loads the effects of which therefore also cancel.

3,628,384

ACCELERATION SENSOR

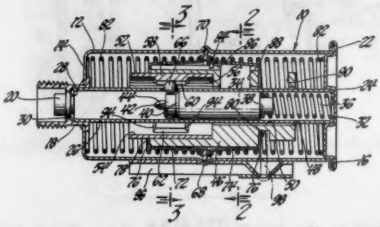
Trevor O. Jones, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 36,280

Int. Cl. G01p *15/02*

U.S. Cl. 73—514 **4 Claims**

A multidirectional sensor having an operator mounted within a guide tube and spring biased in one axial direction for movement from a first position to a second actuated position. The operator is constrained against movement by the engagement of a plurality of balls mounted within apertures in the wall of the guide tube with a shoulder of the operator. The balls are held against movement outwardly of the guide tube apertures by an internal annular wall of an annular pendulous seismic mass mounted on the guide tube for movement axially and rotationally thereof. The axis of the guide tube, the axis of pendulosity of the mass, and the axis of the mass are coaxial. This wall is interrupted by a plurality of equally spaced axial grooves and the balls normally engage



the wall intermediate the grooves. Spring seats on spaced annular walls of the mass and a common stop on the sensor housing are engageable by opposing threshold springs to locate the mass against movement axially of the guide tube. One of the springs torsionally engages the mass to locate the mass against movement rotationally of the guide tube. The sensor can be externally reset when the operator is in actuated position.

3,628,385

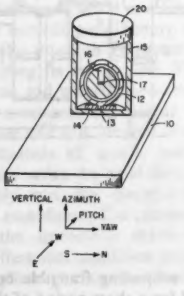
SELF-COMPENSATED AZIMUTH PICKOFF DEVICE

Lester M. Ross, Sr., and William W. Stripling, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 17, 1969, Ser. No. 885,766

Int. Cl. G01c *19/28*

U.S. Cl. 74—5.6 **4 Claims**



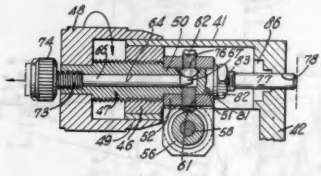
A device for measuring a small angular displacement of the case of a spinning sphere gyro with relation to an east-west line as defined by the spinning sphere. The case is mounted on a stabilized platform. Although the device is subjected to angular displacements about the case vertical axis and about one of the case horizontal axes, it provides an electrical output proportional only to the input about the vertical axis. This is accomplished by employing a light source projecting on a mirror carried by the sphere, with two detectors arranged orthogonal to each other. Each detector includes two photosensitive elements. The outputs of the elements are so combined that horizontal axis displacement is nulled, but vertical axis displacement is not.

3,628,386

MICROMETER STAGE ADVANCE DEVICE FOR SCIENTIFIC INSTRUMENTS OR THE LIKE

Josef Blum, Norwalk, Conn., assignor to Ivan Sorvall, Inc., Newton, Conn.

Filed Mar. 5, 1970, Ser. No. 16,814
Int. Cl. F16h 27/02
U.S. Cl. 74—89.15 14 Claims



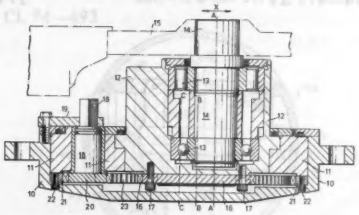
A micrometer for adjusting the position of a movable stage in a microtome or the like having both coarse and fine adjustment means. The fine adjustment means is operative throughout the whole range of movement controlled by the coarse adjustment means.

3,628,387

MECHANISMS FOR CONVERTING ANGULAR MOTION TO STRAIGHT LINE MOTION

Joseph Gaskell, Wigan, and Terence Hamilton, Shevington, near Wigan, both of England, assignors to Dobson Gullick Limited, Inc., Wigan, Lancashire, England

Filed Mar. 3, 1970, Ser. No. 16,194
Claims priority, application Great Britain, Mar. 15, 1969, 13,728/69
Int. Cl. F16h 27/04
U.S. Cl. 74—89 2 Claims



A tensioning mechanism for a belt or chain particularly a conveyor belt or chain comprises two eccentric devices mounted one within the other and geared together by an epicycliclike gear train. One eccentric device carries a shaft for a wheel around which the belt or chain passes. A member of the epicycliclike gear train has means whereby it can be rotated manually so as to cause relative angular displacement of the eccentric devices and thereby movement of the shaft in substantially a straight line in a tension-adjusting direction for the belt or chain.

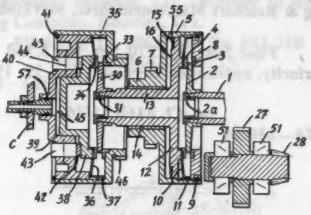
3,628,388

FRICTION-TYPE VARIABLE-SPEED TRANSMISSIONS

Pierre Bouthors, and Philippe Quemerais, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Nov. 26, 1969, Ser. No. 880,077
Claims priority, application France, Dec. 12, 1968, 177941
Int. Cl. F16h 15/14
U.S. Cl. 74—199 4 Claims

Variable-speed transmission of the type comprising a disc interposed between a pair of rings coacting therewith through corresponding friction surfaces, and a driving shaft to which said disc is attached and a driven shaft parallel to said driving shaft and rigid with a drum in which said rings



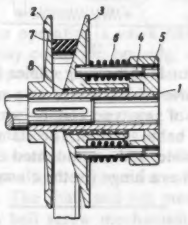
are mounted, said driven shaft being adapted to move transversely about a lay shaft parallel thereto for producing the desired speed variation.

3,628,389

INFINITELY VARIABLE SPEED BELT TRANSMISSION WITH CONICAL PULLEYS

Hans Wiegelmann, and Helmut Germann, both of 6349 Sinn, Dillkreis, Germany

Filed Feb. 24, 1970, Ser. No. 13,736
Claims priority, application Germany, Feb. 27, 1969, P 19 09 887.4
Int. Cl. F16h 55/52
U.S. Cl. 74—230.17 7 Claims



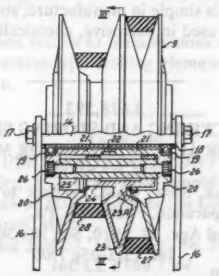
One of the two conical pulley discs mounted on a common shaft of an infinitely variable speed belt transmission has a central bore lined with a smoothly cylindrical antifriction bushing which permits free movement of the disc on the shaft in an axial direction and does not interfere with rotation of the disc on the shaft. The bushing has a continuous metallic backing fixedly fastened to the axially movable disc and a facing of porous sintered metal on the backing and engaging the shaft, the pores of the facing being filled at least partly with a solid fluorocarbon.

3,628,390

VARIABLE RATIO TRANSMISSIONS

Cornelis Van Der Lely, 7, Bruschenrain, Zug, and Hendricus Jacobus Cornelis Nieuwenhoven, Baar, both of Switzerland

Filed Dec. 23, 1969, Ser. No. 887,571
Claims priority, application Netherlands, Jan. 2, 1969, 6900003
Int. Cl. F16h 55/22
U.S. Cl. 74—230.17 A 14 Claims

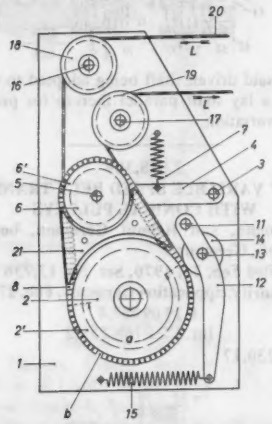


This invention relates to variable ratio transmissions intended for use in agricultural implements.

3,628,391
DRIVE APPARATUS FOR CABLES

Willi Gumlich, Marktoberdorf, Allgau, Germany, assignor to Schlang & Reichart Maschinenfabrik, Marktoberdorf, Germany

Filed Jan. 19, 1970, Ser. No. 3,730
Claims priority, application Germany, Jan. 22, 1969, P 19 02 970.0
Int. Cl. F16h 55/36
U.S. Cl. 74—230.24 11 Claims

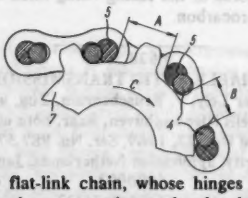


A cable drive for load bearing cables having a drive disc with a keyed groove which serves as a running groove and coacts with pairs of jaw-type clamps which are drawn into the groove by the cable tension. The clamps include a recess for gripping the cable, and are mounted on a further endless cable which serves as a hinge for the clamped pairs.

3,628,392
MULTIROW FLAT-LINK CHAIN

Ilya Ilich Ivashkov, 9 Parkovaya ulitsa 43/26, kv. 198, and Vasily Alexandrovich Frolovtsev, Ferganskaya ulitsa, 18, kv. 263, both of Moscow, U.S.S.R.

Filed Jan. 2, 1970, Ser. No. 276
Int. Cl. F16g 13/02
U.S. Cl. 74—245 R 5 Claims



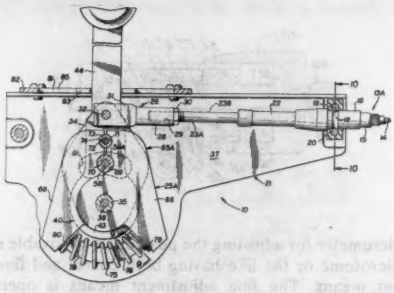
A multirow flat-link chain, whose hinges are formed by supporting members contacting each other by their external working surfaces of which one is convex and the other concave. The chain is simple in manufacture, strong, durable and is reliable when used in corrosive, chemically active and pulverized media.

3,628,393
ENERGY RECEIVING AND STORING SINGLE LEVER CONTROL FOR ACTUATING ONE OR MORE REMOTE MECHANISMS

Richard D. Houk, Stow, Ohio, assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1970, Ser. No. 30,003
Int. Cl. G05g 1/00
U.S. Cl. 74—470 16 Claims

A control device having a single lever movable between at least two locating positions to apply an actuating force to one or more remote servient mechanisms. A holding means retains the control lever in the selected locating position, and a first drive means operatively connects the control lever to a tong means comprised of rotatably opposed tong arms. Engagement of the first drive means with the tong means rotates one arm thereof in response to movement of the control lever, and an energy receiving and storing means between the

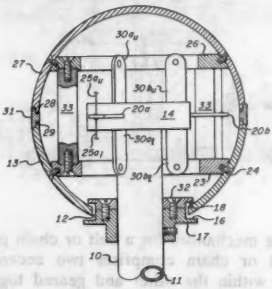


tong arms receives the force incident to rotation of the one tong arm and applies it biasingly against the second tong arm for rotation thereof. A second drive means operatively connects the tong means to a throw member so that rotation of the second tong arm will move the throw member to operate a motion-transmitting device connected between the control and each remote servient mechanism.

3,628,394
OPERATOR-MANIPULATIVE CONTROL APPARATUS

Gerald R. Keatinge, Bayville, and Herman S. W. Young, Huntington Station, both of N.Y., assignors to Sperry Rand Corporation

Filed Feb. 9, 1970, Ser. No. 9,755
Int. Cl. G05g 9/04
U.S. Cl. 74—471 XY 17 Claims



An operator-manipulative control mechanism comprising a spherical housing internally suspended from a fixed center post by a network of interconnected coil springs and leaf springs, the latter being cantilevered from the center post so as to flex in response to variously directed motions of the housing whereby strain gauges mounted thereon for sensing the flexure provide resolved control signals proportionate to operator forces applied to the housing.

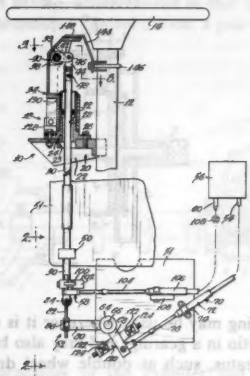
3,628,395
TRANSMISSION CONTROL MECHANISM

Herman J. Maurer, Terre Haute, Ind., assignor to J. I. Case Company

Filed Nov. 6, 1969, Ser. No. 874,493
Int. Cl. G05g 9/02
U.S. Cl. 74—473 R 11 Claims

A control mechanism for shifting a pair of control devices forming part of the transmission of a vehicle. The control

mechanism includes a shift lever which is rotatable about its own longitudinal axis and which is pivotable about an axis perpendicular to its own axis with the respective movements transmitted to two control devices forming part of a vehicle transmission. The dual motion of the shift lever is transmitted



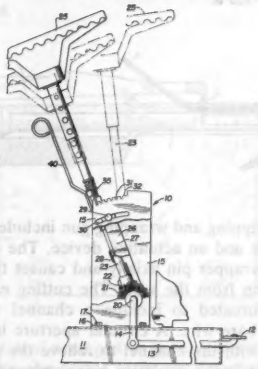
through a single control rod connected at one end to the shift lever and at the opposite end to the respective control devices. The connections to the control devices incorporate mechanism which transmits only the rotary motion of the rod to one of the control devices and the axial shifting of the control rod to the other of the devices.

3,628,396

ADJUSTABLE STEERING ASSEMBLY

Ben T. Grobowski, Newark, Ohio, assignor to A-T-O Inc., Cleveland, Ohio

Filed Feb. 2, 1970, Ser. No. 7,577
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **5 Claims**



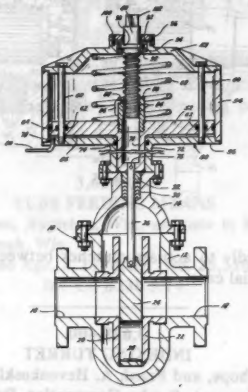
A low cost adjustable steering assembly comprising a pair of upstanding support plates to be fastened to the frame of the vehicle and between which the steering shaft is pivoted for forward and rearward adjustable swinging movement about a pivot and crankshaft also carried thereby. The crankshaft is connected by suitable linkage to the vehicle wheels to be steered. The crankshaft is turned by gears connecting the steering shaft and the crankshaft which are arranged to permit the swinging adjustment. The upstanding support plates have notched indexing portions on their upper ends, which cooperate with an indexing rod and bracket adjustably carried by the steering shaft and having biasing means for normally keeping the bracket in selective engagement with the notched indexing portions.

3,628,397

VALVE ACTUATOR

John M. Sheesley, Houston, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed July 14, 1969, Ser. No. 841,318
Int. Cl. F16h *35/00, 55/22*
U.S. Cl. 74—625 **1 Claim**



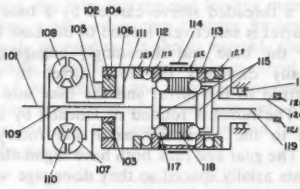
An actuator for operating a valve having a reciprocating operating stem may comprise: housing; a piston disposed in the housing and operable by fluid pressure on one side of the piston to move the piston in a first direction, the piston being connected to the valve stem; a spring biasing the piston in a second direction; and a shaft mounted in the housing for rotation only in threaded engagement with a nut member attached to the piston for reciprocation of the piston on rotation of the shaft. The shaft and nut member may comprise components of a ball screw mechanism in which their engagement is accomplished through ball bearings carried by the thread grooves of said shaft and nut.

3,628,398

POWER TRANSMISSION

Walter V. Chery, 744 Alden St., Meadville, Pa.

Filed Aug. 22, 1967, Ser. No. 662,397
Int. Cl. F16h *57/10*
U.S. Cl. 74—688 **6 Claims**



This invention relates to transmissions and, more particularly, to the traction-type (rolling elements) infinitely variable transmission.

3,628,399

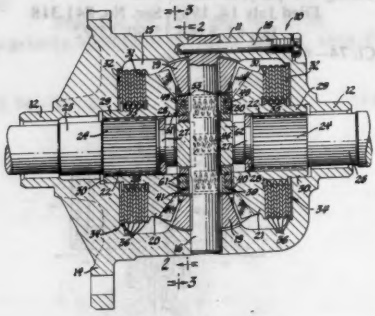
HYDRAULIC LIMITED SLIP DIFFERENTIAL

William R. Seitz, Rochester, and Donald R. Whitney, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1970, Ser. No. 57,221
Int. Cl. F16h *1/44*
U.S. Cl. 74—711 **4 Claims**

Improved limited slip differential arrangements employing hydraulic actuators with hydrodynamic bearing pump pres-

sure developing means wherein the hydraulic clutch-actuating means are disposed between the side gears so as to urge

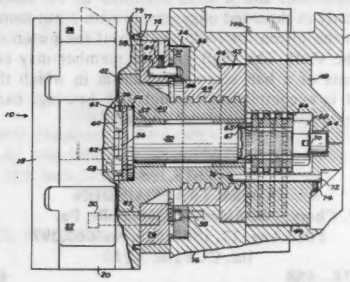


them outwardly to actuate clutches between the side gears and differential case.

3,628,400
INDEXING TURRET

Ronald D. Chope, and Frank A. Hevonkoski, both of Detroit, Mich., assignors to Snyder Corporation, Detroit, Mich.

Filed Apr. 13, 1970, Ser. No. 27,945
Int. Cl. B23b *29/32*
U.S. Cl. 74—826 **12 Claims**



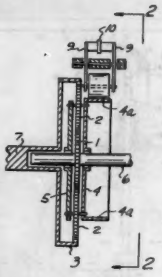
A tool turret mounted for rotation about and axial movement with a threaded sleeve carried by a base. The freely rotatable turret is selectively locked to the base by a locknut carried by the base and threadingly engaging the sleeve which axially displaces the tool turret to urge curvic couplings fixed to the turret and the base into locking engagement. The turret is rotated or indexed by a rack and a gear fixed to the turret for axial and rotary movement therewith. The gear and rack both have segmented teeth with the segments axially spaced so they disengage when the turret is locked and become engaged to index the turret only when it is axially displaced to unlock the curvic couplings.

3,628,401
GEARINGS

Robert P. Wuerfel, 4010 Galt Ocean Drive, Fort Lauderdale, Fla.

Continuation-in-part of application Ser. No. 29,904, Apr. 20, 1970, now abandoned. This application Jan. 11, 1971, Ser. No. 105,273
Int. Cl. B60k *21/00*; **F16h** *57/10*
U.S. Cl. 74—865 **7 Claims**

A gearing of the sun gear, outer gear, and planetary gearing type wherein means are provided to retard or inhibit walking movement of the planetary gearing around the sun gear to change the drive ratio, and wherein such means comprises a mechanical, operator-controlled means for applying a holding force to the planetary gearing to a greater or lesser extent.



The gearing may be used wherever it is desired to change the drive ratio in a gearing; and may also be used as parts of other apparatus, such as double wheel drives wherein one wheel moves faster than the other despite being driven from a common drive.

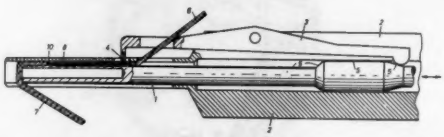
ERRATUM

For Class 81—3.42 see:
Patent No. 3,628,405

3,628,402
WIRE STRIPPING AND WRAPPING GUN

Bruno Staiger, Rosenfeld, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 9, 1970, Ser. No. 44,827
Claims priority, application Germany, June 16, 1969, P 19 30 479.1
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 R **4 Claims**



A wire stripping and wrapping gun includes a wrapper pin, a lever knife and an actuating device. The actuating device moves the wrapper pin axially and causes the knife to strip the insulation from the wire. The cutting edge of the lever knife is bifurcated to include a channel wide enough to receive the bare wire. A circular aperture is provided to be contiguous with the channel to relieve the pressure tending to be built up in the insulation being stripped and causing the insulation to crimp or jam the knife. The crimping and jamming may be further alleviated by making the inner surface of the knife facing the insulation concavely curvatured.

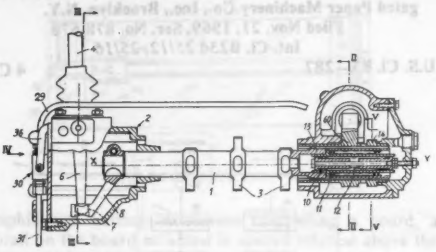
3,628,403
POWER-ASSISTED CHANGE-SPEED TRANSMISSION MECHANISMS

Pierre Labat, 8 quai Galliene, Suresnes, France

Filed Sept. 21, 1970, Ser. No. 73,908
Claims priority, application France, Oct. 3, 1969, 6933935
Int. Cl. F16h *5/06*
U.S. Cl. 74—335 **2 Claims**

A power-assisted control device for a change-speed transmission mechanism providing a plurality of gear ratios en-

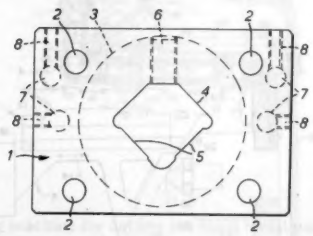
gageable at will, which comprises a gear selector adapted to perform a directed movement of selection and a directed movement of engagement of the gear ratios of said transmission mechanism, a manually operated gear change lever, a servo action device operatively connected to said gear selector, means responsive to said gear change lever for actuating said servo action device, characterized in that there are provided, as a power-assisted control device, a pair of single-acting pneumatic actuators of the cylinder and piston type wherein the pistons acting in opposition on said gear selector, are immersed in the lubricant of the transmission casing with their faces opposite to the pneumatic control chamber of said actuators, each piston aforesaid forming a damping chamber having a fixed wall in the casing, with at least one throttling passage for the lubricant between said casing and said damping chamber.



3,628,404
MACHINE TOOLS

Raymond A. Riley, Bulkington, Nuneaton, England, assignor to The Dunlop Company Limited, London, England

Filed May 14, 1969, Ser. No. 824,444
Claims priority, application Great Britain, May 17, 1968, Nov. 15, 1968, 23,520/68; 54,263/68
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 **10 Claims**



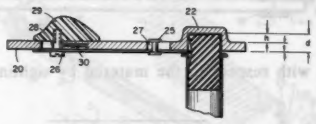
In a machine tool arranged to accept preset tools, a tool carrier on which the preset tools are detachably mounted. Locating surfaces formed either in an aperture or on a support projection of the carrier are arranged to engage corresponding seating surfaces on a tool holder so that with the tool carrier in the operative position the locating surfaces extend parallel to the spindle axis of the machine tool.

3,628,405
STOPPER REMOVING IMPLEMENT

Martin Fleisher, 45 Knott Drive, Glen Cove, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,488
Int. Cl. B67b *7/06*
U.S. Cl. 81—3.42 **7 Claims**

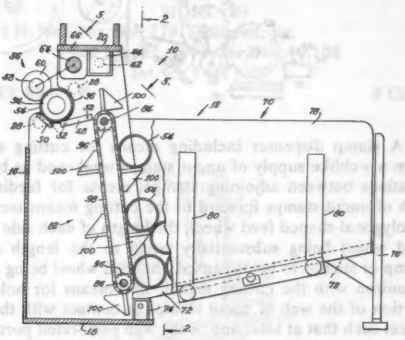
Apparatus for removing a resilient stopper which protrudes substantially from the rim of a test tube. An elongated base member having an aperture therein is provided. A stopcap element covers the aperture on one side of the member and a blade element is slidably mounted on the other side. In operation, the stopper is inserted in the aperture and the blade element engages the least protruding portion of the stopper.



3,628,406
TUBE FEEDING MEANS

Bruce W. Stevens, Appleton, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed Apr. 2, 1970, Ser. No. 25,110
Int. Cl. B23b *5/14*
U.S. Cl. 82—89 **11 Claims**



Tube storage and feeding apparatus for use in a tube-cutting machine having a work station and a reciprocating mandrel adapted to selectively support a tube disposed in the work position, the tube storage and feeding means including a storage bin, a tube-advancing elevator having tube-lifting lugs selectively secured to lift chains movable through driven sprocket shafts, a spiral cam rotatable in direct response to movement of the mandrel, and clutch means operative to effect advancing movement of the lift lugs only during movement of the mandrel to a position removed from the work station of the machine.

ERRATUM

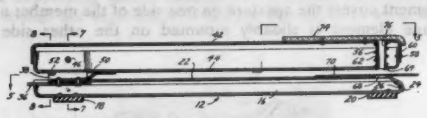
For Class 83—38 see:
Patent No. 3,628,450

3,628,407
PRECISION LONG REACH HOLE PUNCH

Hobart S. Adams, 1700 Delancey St., Philadelphia, Pa.

Filed Dec. 22, 1969, Ser. No. 887,447
Int. Cl. B26f *1/02*
U.S. Cl. 83—140 **3 Claims**

Apparatus for perforating sheet material is disclosed, wherein perforations are made by a hollow punch having a central bore therein, the lower end of the bore being visible

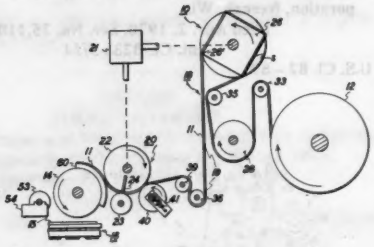
from above so that an operator can precisely position the

punch with respect to the material by sighting through the bore.

3,628,408

STAMP DISPENSER

Trygve R. Rod, Mundelein, Ill., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,709
Int. Cl. B26d 5/22
U.S. Cl. 83—175 **4 Claims**



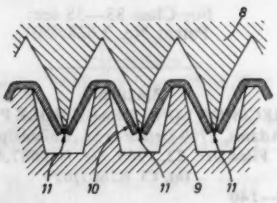
A stamp dispenser including means for cutting stamps from a weblike supply of uncut stamps weakened as by perforations between adjoining stamps; means for feeding the web of uncut stamps forward to the cutting means including a polygonal-shaped feed wheel, the length of each side of the feed wheel being substantially equal to the length of the stamp or stamps to be dispensed, the feed wheel being driven in unison with the cutting means; and means for holding a portion of the web of uncut stamps in contact with the feed wheel such that at least one of the web perforated portions is always bent about one corner of the feed wheel whereby to maintain the web of uncut stamps in nonslip contact with the feed wheel and in constant registration with the stamp cutting means.

3,628,409

DEVICE FOR CUTTING SHEET MATERIAL

Pierre Imbert, Fleury-Les-Aubrais, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed July 15, 1968, Ser. No. 744,879
Claims priority, application France, July 19, 1968, July 24, 1968, 114 728; 115 317
Int. Cl. B26d 7/14
U.S. Cl. 83—175 **12 Claims**



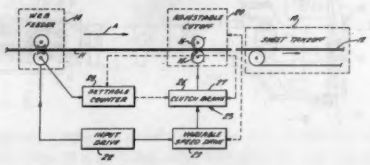
Apparatus for cutting sheet material into strips, including means for applying a drawing force to a sheet of said material to cause said sheet to be drawn along and simultaneously causing restraining forces to be applied to said sheet on either side thereof to restraint it against the drawing action of said drawing forces.

3,628,410

CUTOFF CONTROL FOR CUTTING LONG SHEETS

Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,678
Int. Cl. B23d 25/12, 25/16
U.S. Cl. 83—287 **4 Claims**



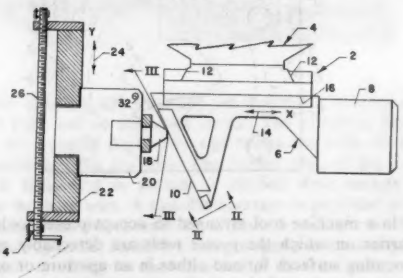
Actuation of a brake means brings a cyclically variable drive transmission for cutoff knives to a stop at a minimum speed point in each cycle and the transmission remains stopped until a predetermined length of the web is fed past the knife bars. Thereafter, the brake is released and substantially at the same time a clutch mechanism is actuated to supply power to drive the transmission, which then drives the knife bars through a cutting operation while the web continues in motion.

3,628,411

RETRACTABLE SPECIMEN HOLDER FOR A MICROTOME

Norman W. Shatzel, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

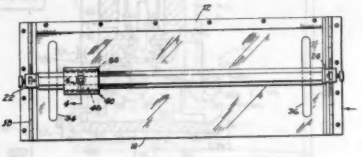
Filed Jan. 26, 1970, Ser. No. 5,708
Int. Cl. G01n 1/06
U.S. Cl. 83—414 **2 Claims**



A microtome in which the feed is accomplished by a screw-adjusted nose cam against which is biased an inclined plane. The inclined plane is a part of the specimen head which reciprocates relative to the microtome knife. The nose cam is screw advanced at the top of each stroke before the next downward or cutting stroke.

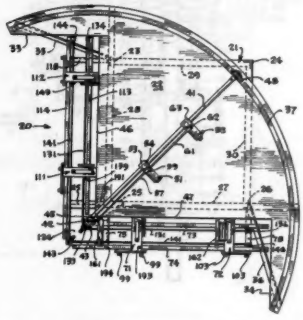
The nose cam is eccentrically and rotatably mounted relative to the microtome frame. At the bottom of each cutting stroke, this nose cam is rotated causing it to displace laterally, allowing the inclined plane and the specimen head to retract slightly from the knife for the upstroke.

3,628,412
GRAPHIC ARTS CUTTING INSTRUMENT
Harry W. Rogers, Jr., 14 Packard St., Hudson, Mass.
Filed Mar. 2, 1970, Ser. No. 15,659
Int. Cl. B26d 7/02
U.S. Cl. 83—455 1 Claim



Graphic arts cutting instrument comprising a board, a monorail on the board mounted in spaced relation above the same, a double cutter mounted on a slider on the monorail for cutting a column on the board, and a holddown device for the work being cut, said holddown device including magnetic clamping means therefor.

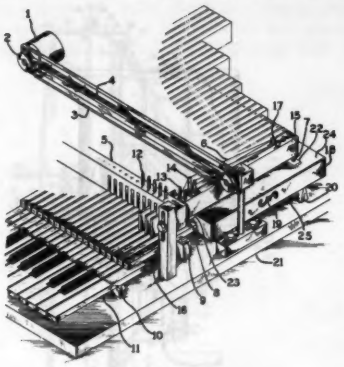
3,628,413
SHEET METAL CUTTING MACHINE
Louis F. Miklos, 6151 Delaware, Gary, Ind.
Filed Apr. 13, 1970, Ser. No. 27,663
Int. Cl. B26d 11/00
U.S. Cl. 83—513 9 Claims



A cutting machine for cutting out sheet metal panels for elbows and other curved duct sections, including a table for supporting a sheet metal workpiece and two sets of notching devices, mounted adjacent two different sides of the table. A common positioning drive links the two sets of notching devices. At least one cutter is mounted on a support arm that swings the cutter across the table to cut the workpiece along a desired arc. Index devices coordinate the cutter positions with the notching devices to align the notches and the cut.

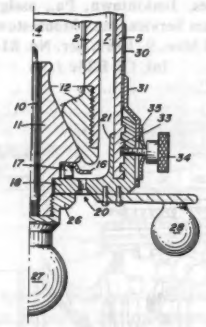
3,628,414
VIOLIN PIANO
Louis Elteto, 605 N. Lincoln Ave., Alliance, Ohio
Filed Sept. 9, 1968, Ser. No. 758,550
Int. Cl. G10c 1/00
U.S. Cl. 84—257 1 Claim

A violin piano having a plurality of pivotal levers each carrying a string. When a key is struck the levers are pivoted so as to place the string in contact with a moving belt. A flexible



pin is provided to act as a spring for returning the lever to its rest position and to connect the lever to a sound box.

3,628,415
MORTAR
Stuart H. McElroy, Box 278, Dahlgren, Va.
Filed Jan. 27, 1970, Ser. No. 10,108
Int. Cl. F41f 1/06
U.S. Cl. 89—1 F 8 Claims

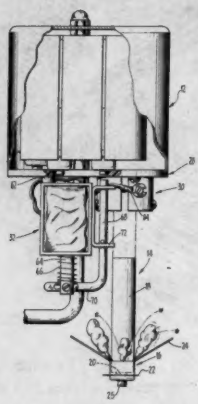


A method and apparatus for setting and continuously changing the range of a mortar. The mortar is provided with a variable vent that acts to regulate chamber pressure. The vent setting is determined by a range matrix plate located on the mortar barrel. A drain path is provided for trapped rain water and the same opening allows a cooling airflow into the interior of the barrel. Combustion residue is carried out through the open variable vent by exhaust gases.

3,628,416
FLARE-DISPENSING AND IGNITING APPARATUS
George L. Kernan, 1810 Market Ave., San Pablo, Calif.
Filed Oct. 15, 1969, Ser. No. 866,534
Int. Cl. F41f 5/00
U.S. Cl. 89—1.5 R 9 Claims

An apparatus adapted to be supported on a vehicle for storing an ignitable safety flare, dispensing the flare to deposit the same on the road, and in the process of dispensing the flare causing the same to be ignited. In one embodiment of the invention a plurality of flares are stored

in a rotatable turret or magazine. The latter is rotatable to position sequential flares at a discharge station with a metal conductor pin extending through the flare serving as the sole support for the flare. Sending an electrical current through



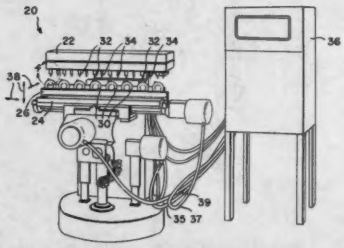
such a pin causes the pin to heat up, ignite the powder in the flare, and simultaneously, due to the melting of the pin, results in the dropping of the ignited flare from the storage magazine.

3,628,417

METHOD AND APPARATUS FOR ENGRAVING CHARACTERS

Herman Graboyes, Jenkintown, Pa., assignor to Numerical Control Program Service, Inc., Moorestown, N.J.

Filed Mar. 9, 1969, Ser. No. 814,684
Int. Cl. B23c *1/16*
U.S. Cl. 90—13 C **8 Claims**



A method and apparatus for engraving characters by the use of numerically controlled machine tools. The characters are engraved by moving a first machine tool about the outline of the desired character. Where the character has inside corners, a second numerically controlled machine tool is moved about the outline at the inside corner at a plurality of depths to reduce the radius of the curvature at the inside corner.

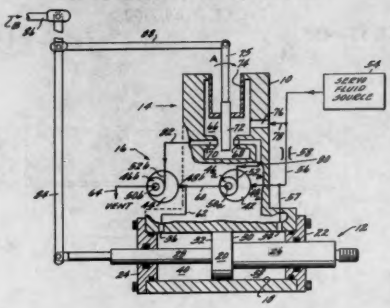
3,628,418

VORTEX VALVE SERVOACTUATOR

Thomas S. Honda, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 22, 1970, Ser. No. 4,849
Int. Cl. F15b *13/042, 9/10, 15/17*
U.S. Cl. 91—47 **5 Claims**

A servoactuator is disclosed which comprises a two stage servo in combination with a differential piston area actuator, the second servo stage comprising a pair of serially connected fluid vortex amplifiers.

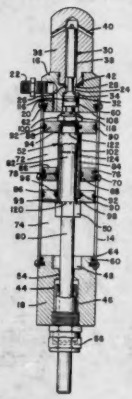


3,628,419

FLUID-OPERATED MOTOR

George E. Doughton, Tobaccoville, N.C., assignor to Doughton Manufacturing Company, Inc., Charlotte, N.C.

Filed Aug. 21, 1969, Ser. No. 851,829
Int. Cl. F01l *15/12*; F01b *7/18*
U.S. Cl. 91—224 **5 Claims**



A source of pressurized fluid is constantly introduced into one end of a cylinder having a double acting reciprocating piston assembly mounted therein. A valve assembly including piston elements is slidably secured to the main piston assembly for displacement relative to the cylinder and piston assembly for controlling the application of fluid pressure to opposite ends of the piston assembly alternately.

3,628,420

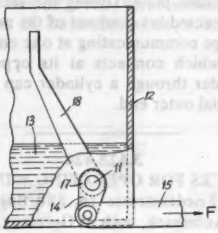
TRACTIVE STRESS DETECTOR FOR TRACTORS

Raymond Boueil, and Marcel Rolland, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France

Filed Oct. 14, 1968, Ser. No. 767,252
Claims priority, application France, Nov. 24, 1967, 129537
Int. Cl. G05g *1/00*; A01b *63/112*; F15b *13/16*
U.S. Cl. 91—367 **1 Claim**

Device for detecting tractive stress on farming tractors, which comprises traction rods fulcrumed to levers secured to a rotary shaft mounted in an oil-tight manner in two opposite

walls of the rear axle case by means of rubber bushes adhering both to said shaft and to said walls. Said shaft acts upon a



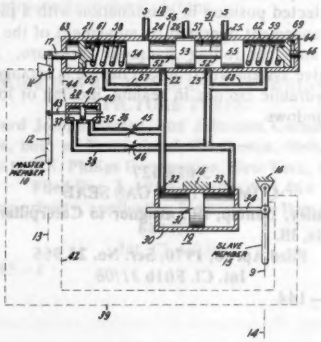
distributor controlling the hydraulic raising of the equipment, and an elastic means counteracts the rotation of said shaft urged for rotation by the tractive stress.

3,628,421

BILATERAL HYDROMECHANICAL SERVOSYSTEM

Raymond L. George, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 30, 1970, Ser. No. 33,191
Int. Cl. F15b *13/16*
U.S. Cl. 91—358 **5 Claims**



A single control valve is utilized in the slave loop and master force feedback loop. Instabilities in the master loop due to the high gain required in the slave loop are eliminated by utilization of the actuator in master loop in cooperation with orifices to provide a dashpot in the master loop to suppress instabilities in the master loop.

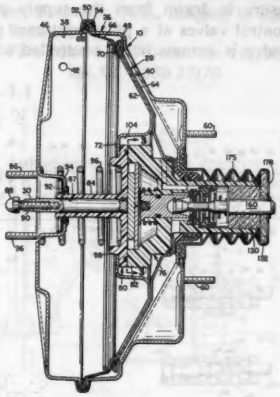
3,628,422

POWER BRAKE REACTION MECHANISM

Sydney R. Acre, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 4, 1969, Ser. No. 847,112
Int. Cl. F15b *9/10*
U.S. Cl. 91—369 B **4 Claims**

A reaction mechanism for a two-stage power brake unit having a pressure-responsive movable wall, valve means controlling the pressure differential on opposite sides of the wall and actuating means operable in a first stage to effect movement of the valve means in response to manual effort, the reaction mechanism including freely floating lever means operable in a second stage to resist movement of the actuating means in a substantially direct and uniform ratio to the force developed by the wall.

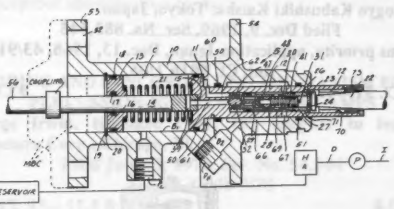


3,628,423

POWER BRAKE BOOSTER

Richard Warren Dymond, Rochester, Mich., assignor to TRW, Inc., Warren, Mich.

Filed Oct. 30, 1969, Ser. No. 872,575
Int. Cl. F15b *9/10*
U.S. Cl. 91—376 **4 Claims**



A power brake booster uses high-pressure hydraulic fluid as an energy source. A piston and rod assembly is guided by coaxial bores in a housing. Valve means for controlling the operation of the booster are contained within the piston and rod assembly and are actuated in response to movement of an input rod adapted to be connected through a brake pedal. The flow of hydraulic fluid from a high-pressure port through the valve mechanism is regulated through a working chamber behind the piston and from the working chamber to a low-pressure port adapted to be connected to the reservoir or tank of the hydraulic system. The output rod of the piston is connected to a master cylinder assembly.

3,628,424

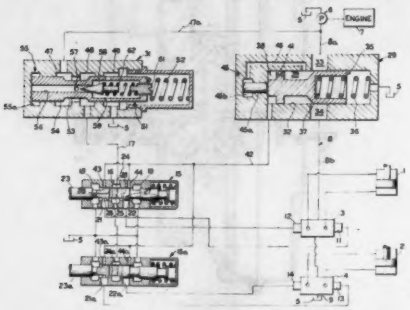
HYDRAULIC POWER CIRCUITS EMPLOYING REMOTELY CONTROLLED DIRECTIONAL CONTROL VALVES

Waldo G. Fruehauf, and Robert W. Rue, both of Kalamazoo, Mich., assignors to General Signal Corporation

Filed May 14, 1970, Ser. No. 37,200
Int. Cl. F15b *13/042, 13/06*
U.S. Cl. 91—446 **5 Claims**

Hydraulic power circuit in which each actuating cylinder is controlled by an open center, pilot-operated directional con-

trol valve which is operated by a low-pressure remote control system utilizing fluid taken from the same pump which supplies motive fluid for the cylinders. The fluid which is supplied to the pilot valves of the remote control system at a reduced pressure is drawn from the supply path for the directional control valves at a point upstream of a throttle valve. This valve is automatically controlled so that it assumes a low flow-restricting position when the pilot valves, and consequently the directional control valves, are in neutral position, and assumes a high flow-restricting position whenever one of the pilot valves is shifted away from neutral position. An override control, which responds to supply pressure, shifts the throttle valve to low flow-restricting position during actuation of a cylinder.



3,628,425

FLUID MOTOR-PUMP CONSTRUCTION

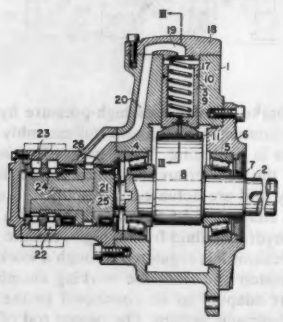
Kiyoshi Morita, Chikushino-machi, and Shigemi Kawano, Fukuoka-shi, both of Japan, assignors to Messrs. Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,545

Claims priority, application Japan, Dec. 13, 1968, 43/91444

Int. Cl. F01b *1/06*

U.S. Cl. 91—491 **9 Claims**



A device such a motor or a pump includes a rotatable eccentrically carried member or plate which is connected to rotate one or more radially extending pistons so as to reciprocate them in their associated cylinders for displacing fluid therein, and it includes a slipper pad having a surface on one side which conforms to the curvature of the eccentric plate and is engaged for sliding contact therewith. Each slipper pad engages at its opposite side with a piston member which is radially arranged for reciprocation within its associated cylinder. The piston includes a closed end face adjacent the slipper which conforms to and is maintained in bearing contact with the slipper. Each slipper and associated closed end face of the piston is provided with a communicating passage for permitting the flow of the fluid being pumped into one or more grooves defined on the face of the slipper which is in bearing contact with the cam plate in order to provide lubrication for the bearing sliding contact of the slipper with the cam plate. During the reciprocation of the piston fluid is directed into and out of the associated cylinder through a passage communicating at one end with a distributor valve and which connects at its opposite end into a respective cylinder through a cylinder cap or headpiece arranged at its radial outer end.

3,628,426

DEVICES FOR OPERATING WINDOWS

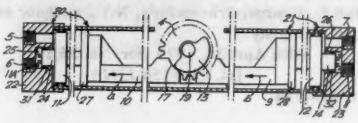
Werner Frach, Friedenstrasse 16, 858 Bayreuth, and Bernhard Janke, Kulmbach, both of Germany, assignors to said Frach by said Janke

Filed Feb. 16, 1970, Ser. No. 11,691

Claims priority, application Germany, Feb. 20, 1969, P 19 08 367.1

Int. Cl. F01b *9/00*

U.S. Cl. 92—138 **9 Claims**



A rack and pinion device with cam designed to hold the rack in a selected position in combination with a piston and cylinder arrangement operated by movement of the rack for producing and controlling hydraulic pressure, and the complete drive system wherein said device is arranged to actuate the hydraulic circuits in sealing, moving or locking of casement windows.

3,628,427

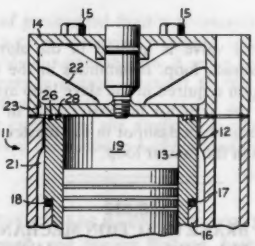
COMBUSTION GAS SEAL

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 6, 1970, Ser. No. 25,966

Int. Cl. F01b *31/08*

U.S. Cl. 92—144 **7 Claims**



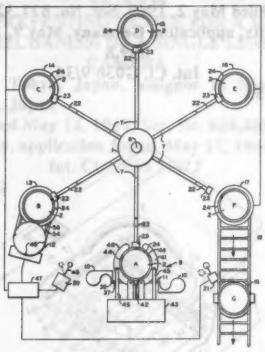
A seal for effectively sealing an engine cylinder liner and cylinder head against gas leakage from a cylinder combustion chamber. The seal is arranged to reduce the gas pressure and heat loads acting on a conformable and resilient sealing element to provide improved sealing with the ability to utilize lower cost sealing materials.

3,628,428

CONTAINER-FORMING MACHINE

Carl R. Peacock, Fulton, N.Y., assignor to Phillips Petroleum Company

Filed Oct. 23, 1969, Ser. No. 868,789
Int. Cl. B31b *3/02, 3/60, 17/02*
U.S. Cl. 93—39.2 9 Claims



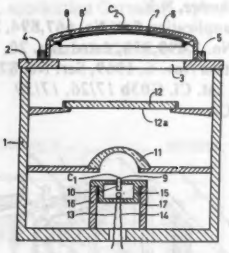
An improved turret container-forming machine having a plurality of mandrels, a sidewall applicator, a bottom disc inserter, and consecutively positioned operating stations, each station having a separate machine component for automatically, continuously forming cartons.

3,628,429

EXPOSURE DEVICE FOR MANUFACTURING COLOR PICTURE TUBES

Piet Gerard Joseph Barten, and Johannes Cornelis Adrianus Vannes, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,464
Claims priority, application Netherlands, Dec. 4, 1968, 6817330
Int. Cl. G03b
U.S. Cl. 95—1 4 Claims



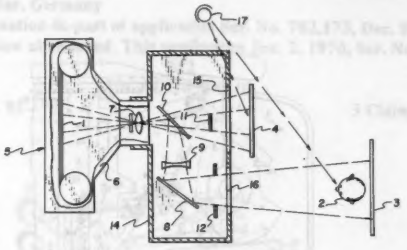
An exposure device for projecting aperture patterns from a mask onto a photosensitive layer on a picture screen for cathode-ray tube comprising a conical light source and a substantially rotationally symmetrical negative lens between the light source and the mask to diverge the light thereby enlarging the transverse dimensions of the light source as viewed from the mask. The dimensions of the light source are increased to compensate for any loss in brightness from the lens.

3,628,430

PHOTOGRAPHIC APPARATUS FOR PRODUCING A TAMPERPROOF IDENTIFICATION CARD

John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,393
Int. Cl. G03b *27/70*
U.S. Cl. 95—1.1 13 Claims



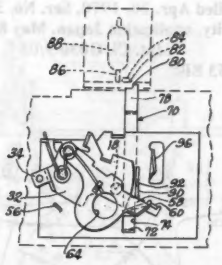
An optical apparatus for photographing images of two or more objects at different magnifications to produce a composite photograph of complementary images having a blurred transition zone without clearly discernible edges between such images. The apparatus includes at least two objectives for forming images of at least two objects on a single record medium. A portion of the light from one object is effectively blocked by a mask which is complementary to a second mask which effectively blocks a portion of the light from a second object. The complementary masks are spaced from the objectives a distance sufficient to blur the edges of the images defining the masked areas thereby producing the blurred transition zone. The apparatus is especially suited for making tamperproof identification cards.

3,628,431

FIRING AND SYNCHRONIZING MECHANISM FOR PERCUSSION-IGNITABLE FLASHLAMPS

George Irwin, Highland Park, Ill., assignor to Imperial Camera Corp., Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,544
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R 8 Claims



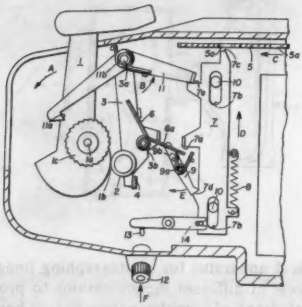
A camera construction including a housing holding a length of film and having film-advancing means and a shutter means for exposing successive frames of film. The shutter means consists of movable plates with an opening defined by one plate for registering with a camera lens opening. A flashbulb of the type which will operate in response to impact from a spring-loaded finger is adapted to flash immediately prior to film exposure. The spring-loaded finger of the flashbulb is operated in timed relationship with the film exposure by means of a push bar which engages the finger in response to engagement of the bar by the movable shutter plates.

3,628,432

FILM METERING MECHANISM

Helmut Ettischer, Esslingen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,542
Claims priority, application Germany, Sept. 28, 1970, P 17 97 450.4
Int. Cl. G03b *1/62*
U.S. Cl. 95—31 FM **7 Claims**



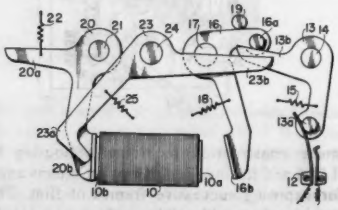
A film metering mechanism for cameras using film having spaced perforations at predetermined metering intervals, the mechanism including a film-advancing member and a sensing member adapted to engage a perforation to control film transport. A continuous biasing force is applied to the film-sensing member so as to resiliently urge it in a direction to intercept and engage a respective perforation as the film is advanced. An additional biasing force is applied to the film-sensing member to transiently increase the total biasing force only during operation of the film-advancing member. Thus, in order to disengage the film-sensing member from a perforation for whatever purpose, it is necessary to overcome only the continuous biasing force.

3,628,433

PHOTOGRAPHIC ELECTRONIC SHUTTER WITH POWER SWITCH CONTROL DEVICE

Masao Takayama, Tokyo-to, and Kiyoyuki Arai, Gyoda, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Apr. 28, 1970, Ser. No. 32,623
Claims priority, application Japan, May 8, 1969, 44/35338
Int. Cl. G03b *9/08*
U.S. Cl. 95—53 EB **3 Claims**



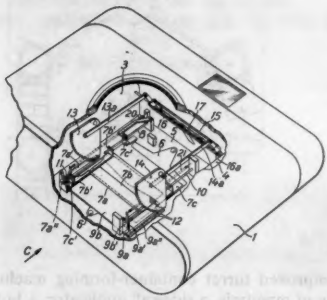
An electronic photographic shutter has an electromagnet which is energized upon closing of a power switch and is deenergized after the time controlled by a delay circuit has elapsed. A shutter-closing member is magnetically attracted to the electromagnet when the electromagnet is energized and is freed from the electromagnet to initiate closing of the shutter when the electromagnet is deenergized. A power switch-holding member is moved by the shutter release button of the camera into a position where it is held by the electromagnet until the electromagnet is deenergized.

3,628,434

FOCAL-PLANE SHUTTER FOR PHOTOGRAPHIC CAMERA

Ludwig Leitz, and Willy Franke, both of Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed May 2, 1969, Ser. No. 821,329
Claims priority, application Germany, May 9, 1968, P 17 72 399.8
Int. Cl. G03b *9/36*
U.S. Cl. 95—55 **8 Claims**



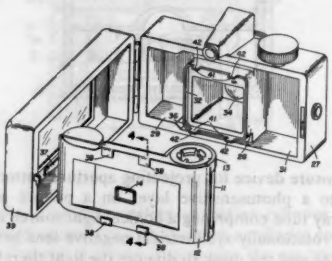
The leading and the lagging shutter blade of a focal-plane shutter are both provided with a racklike row of teeth at the outer edges of each blade and extending in parallel to the direction of shutter-blade movement. The blades move in the direction of the short side of the image aperture in the image-aperture plate, and toothed segments are arranged in the camera between the cone of light, travelling from the camera lens to the film through the image aperture and the adjacent partition walls of the camera housing; the segments being permanently in mesh with the racks of the blades and being used either for driving the shutter blades after shutter release and for returning them to their starting position or only for the latter purpose.

3,628,435

FILM MAGAZINE LOCATING MEANS

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 667,894, Sept. 15, 1967, now Patent No. 3,490,350, dated Jan. 20, 1970. This application Nov. 6, 1969, Ser. No. 871,620
Int. Cl. G03b *17/26, 17/30*
U.S. Cl. 95—31 CA **7 Claims**



A film magazine includes a front-casing member provided with an exposure aperture and a rear-casing member defining

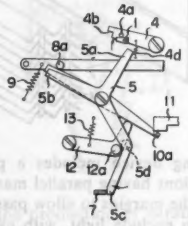
a film-support surface adapted to support a film exposure area in the focal plane of the lens system of a corresponding camera. The magazine is characterized by forwardly facing support surface means defined in predetermined relation to the film-support surface by the rear-casing member of the magazine and adapted to engage corresponding rearwardly facing support-surface means located on the camera in predetermined relation to the lens system thereof.

3,628,436

SHOCK-PREVENTING DEVICE FOR A MIRROR-MOVING MECHANISM OF A SINGLE LENS REFLEX CAMERA

Akihiko Sato, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 14, 1969, Ser. No. 824,486
Claims priority, application Japan, May 17, 1968, 43/40597
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **4 Claims**



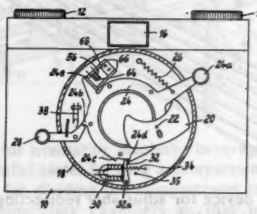
A resilient member is interposed between the mirror of a single lens reflex camera and the shutter actuated quick-return mechanism for the mirror when the quick-return mechanism is manually overridden to detain the mirror in the exposure position. The resilient member prevents the quick-return mechanism for striking the mirror when the shutter is released.

3,628,437

PHOTOGRAPHIC CAMERA

Paul Fahlenberg, Baierbrunn, Germany, assignor to Compur-Werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany

Filed Apr. 15, 1969, Ser. No. 816,307
Claims priority, application Germany, Apr. 18, 1968, P 17 72 237.1
Int. Cl. G03b *9/58*
U.S. Cl. 95—53 E **2 Claims**



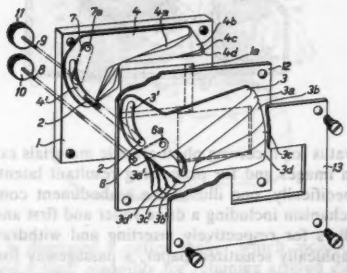
A photographic camera in which the exposure time or shutter speed is controlled by an electronic time control arrangement set into operation by an electronic switch operated by an electrical impulse. The initiating impulse is preferably derived from a gate, which may take various forms. In one disclosed form, the impulse is produced by a magnetic gate; in another, by a photoelectric gate; and in a third form, by a capacitive gate.

3,628,438

SWINGING SECTOR CAMERA SHUTTER

Peter Loseries, Diez, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Continuation-in-part of application Ser. No. 782,173, Dec. 9, 1968, now abandoned. This application Jan. 2, 1970, Ser. No. 212
Int. Cl. G03b *9/10*
U.S. Cl. 95—55 **3 Claims**



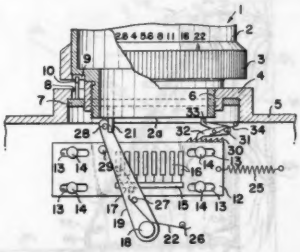
A swinging-sector camera shutter comprising a plurality of sectors. Each sector comprises a plurality of blades including a primary blade and a plurality of covering blades. The primary blade of each sector executes a combined rotary-sliding movement while the covering blades execute a rotary movement about a common pivot point.

3,628,439

PHOTOGRAPHIC CAMERA

Motoyoshi Furusawa, Ohmiya, Japan, assignor to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan

Filed Mar. 16, 1970, Ser. No. 19,840
Claims priority, application Japan, Nov. 11, 1969, 44/106962
Int. Cl. G03b *7/20, 17/12*
U.S. Cl. 95—64 R **1 Claim**



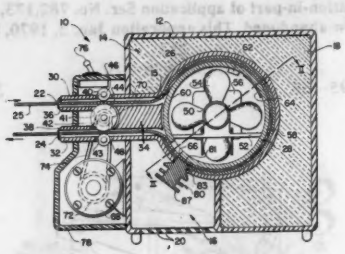
A photographic camera so constructed that a lens assembly having a lens tube is exchangeably screwed into the front face of a camera body. The lens assembly is provided with a rotatable diaphragm ring for manually adjusting the exposure aperture of the lens, and means for detecting the rotational position of the diaphragm ring and means for compensating an error in the mounting position of the lens assembly relative to the camera body are provided in the camera body in combination.

3,628,440

APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL WITH RADIATION

George K. Czarnikow, and William S. Owen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,199
Int. Cl. G03d *13/00*
U.S. Cl. 95—89 R 12 Claims



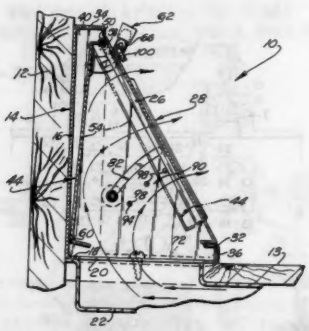
Apparatus for receiving photographic materials exposed to radiation images and for processing resultant latent images. More specifically, one illustrative embodiment comprises a feed mechanism including a drive roller and first and second idler rollers for respectively inserting and withdrawing the photographically sensitized paper, a passageway for guiding the sensitized paper from and to the drive roller, and a single source of radiation. The single source of radiation serves the dual purpose of heating the sensitized paper to thereby retard the development of nonexposed portions of the sensitized material and, after heating, for developing the latent image by photolysis.

3,628,441

REGISTER ASSEMBLY WITH A MOVABLE FRONT PANEL

Wallace F. Ardussi, and Herbert F. Curtis, both of Lakewood, Ohio, assignors to The Auer Register Company, Cleveland, Ohio

Filed Dec. 10, 1969, Ser. No. 883,837
Int. Cl. F24f *13/00*
U.S. Cl. 98—40 C 3 Claims



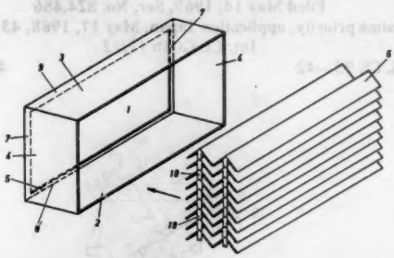
An improved register assembly includes a louvered front panel which is movable between a closed position extending across an opening through which air flows and an open position extending upwardly to provide an unrestricted opening in the top portion of the register assembly. In the closed position the louvered front panel is adapted to disperse or diffuse a flow of warm air. A damper is advantageously mounted on the front panel to control this flow of warm air. When the front panel is in the open position, the register assembly is adapted to direct a relatively large flow of cool air upwardly.

3,628,442

LIGHT-INHIBITING VENTILATING DEVICE

Hendrik Johannes Antonius Nijhuis, Aalst, Netherlands, assignor to Tiger Plastics N.V. Industrieterrein, Geldrop, Netherlands

Filed Oct. 3, 1969, Ser. No. 864,301
Claims priority, application Netherlands, Sept. 12, 1969, 6913893
Int. Cl. F24f *13/08*
U.S. Cl. 98—121 11 Claims



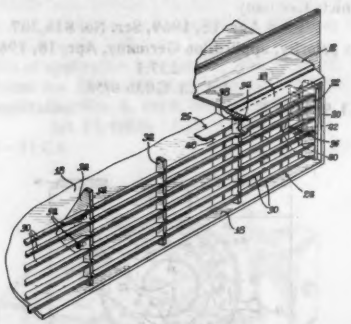
A light-inhibiting device includes a plurality of similar elongated laminations having parallel margins and a parallel peak offset from the margins to allow passage of air between laminations but to exclude light, with extensions extending between laminations to removably space the laminations within a rectangular housing.

3,628,443

ADJUSTABLE AIR-DIRECTION MEANS FOR A CONDITIONER

John Henning, Albion, Mich., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 9, 1969, Ser. No. 883,568
Int. Cl. F24f *13/08*
U.S. Cl. 98—121 6 Claims



Air-direction device for adjustably redirecting air from an air conditioner, including two unitary louvers each having pitched air-directing vanes, means mounting one of the louvers on the conditioner to pivot about an axis parallel generally to its vanes for adjustably redirecting the air in planes parallel to the pivot axis, and means releasably mounting the second louver on the first louver in either of two positions where the vanes cross and in series with the air flow so

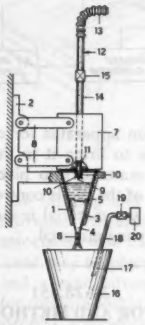
that its vanes redirect the air in planes transverse to the pivot axis.

3,628,444

MACHINE FOR THE PRODUCTION OF AERATED BEVERAGES FROM PREFABRICATED CARTRIDGES CONTAINING FLAVORING SUBSTANCES

Lamberto Mazza, Pordenone, Italy, assignor to Kantor International S.A., Luxemburg, Luxembourg

Filed Dec. 3, 1969, Ser. No. 881,763
Claims priority, application Italy, Dec. 18, 1968, 25,275 A/68
Int. Cl. A23i *1/00*
U.S. Cl. 99—275 17 Claims



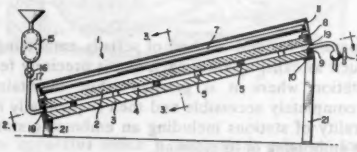
A machine for the production of aerated beverages, employing the method of dissolving a flavoring (and/or sweetening) substance sealed in a cartridge with an aqueous liquid in which the aerated liquid medium, usually carbonated water, is first fed to a vessel underlying the cartridge, after which the cartridge is pierced and the substances contained therein fall into the vessel which already holds the aerated or carbonated liquid medium. The machine can also be used in the conventional manner for the preparation of "flat" beverages by cutting off the aerated liquid-medium feed.

3,628,445

IRRADIATION DEVICE

Georges R. Weber, Geneva, Switzerland, assignor to Research Development Techniques, Inc., Staten Island, N.Y., a part interest

Filed June 23, 1969, Ser. No. 835,376
Int. Cl. C12h *1/06*
U.S. Cl. 99—277.1 7 Claims



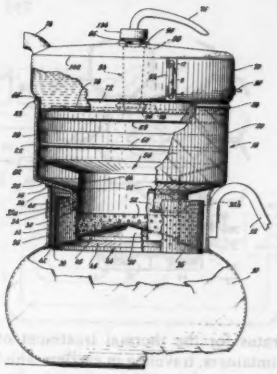
A device for irradiating alcoholic beverages and including a pair of parallel plates forming a compartment therebetween with means for dividing the compartment into a number of inner communicating chambers so that beverage passing from one end of the compartment to the other must follow a tortuous path through the chambers. An actinic light source is positioned adjacent one of the plates of the device and means are provided for pumping alcoholic beverages through the device in order to accelerate the aging process of such beverages.

3,628,446

COMBINATION COFFEE MAKER AND TEAKETTLE

Stephen Joseph Raiteri, 617 Webbs Hill Road, Stamford, Conn.

Filed May 20, 1969, Ser. No. 826,227
Int. Cl. A47j *31/10*
U.S. Cl. 99—305 12 Claims



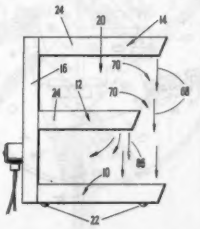
There is disclosed a coffee maker which includes a coffeepot and a filter assembly for retaining ground coffee. An electrically heated teakettle is positioned atop the filter assembly and includes a valve which may be actuated to release a controlled amount of hot water into the filter assembly. This combination forms a drip coffee maker, the brewed coffee being retained in the pot. The teakettle may thereafter be removed and the remaining water used for brewing tea.

3,628,447

HOT FOOD DISPLAY UNIT

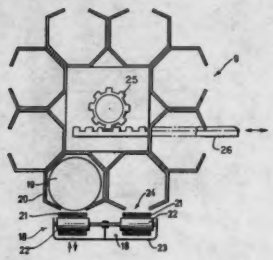
George Levenback, Swampscott, Mass., assignor to Joseph M. Linsey Corp., Somerville, Mass.

Filed Jan. 26, 1970, Ser. No. 5,517
Int. Cl. A47j *39/02*
U.S. Cl. 99—341 11 Claims



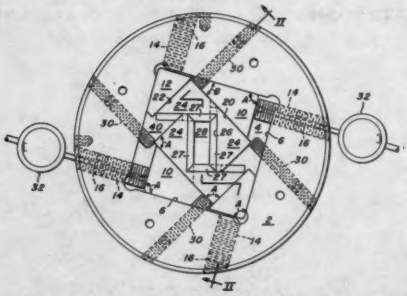
A hot food display and vending unit for popcorn or the like including a plurality of vertically spaced trays mounted to a vertical support. The upper surface of each tray supports the food package. The underside of each tray includes radiant heating means directed downwardly toward the food supported by a tray immediately below to heat the food supported thereon. The unit includes a device which recirculates air through a passage in the underside of each tray and then directs the air downwardly above the periphery of each tray to generate a thermal curtain about the space where the food is displayed.

3,628,448
APPARATUS FOR TREATING ARTICLES
Jort Boer, Oostzaan, Netherlands, assignor to Stork Amsterdam N.V., Amsterdam, Netherlands
Filed Oct. 10, 1969, Ser. No. 865,359
Claims priority, application Netherlands, Oct. 10, 1968, 6814480
Int. Cl. A23l *3/04;* **B65g** *47/34*
U.S. Cl. 99—362 **4 Claims**



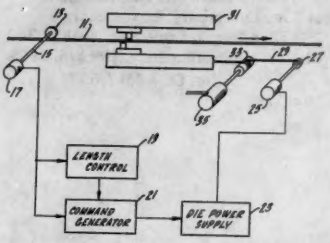
An apparatus for the thermal treatment of commodities packed in containers, traveling in carriers which are rotatably supported in a conveyor. This conveyor passes through a treatment space and the containers are loaded into and discharged from said carriers. Each carrier comprises a number of compartments or cases with a C-shaped cross section, actuating members being provided for simultaneously loading or discharging more than one case from a carrier.

3,628,449
ADJUSTABLE DRAW DIE
William H. Phillips, Jr., Northbergen, N.J., assignor to Carmet Company, Pittsburgh, Pa.
Filed Oct. 1, 1969, Ser. No. 862,675
Int. Cl. B21c *3/00*
U.S. Cl. 72—468 **6 Claims**



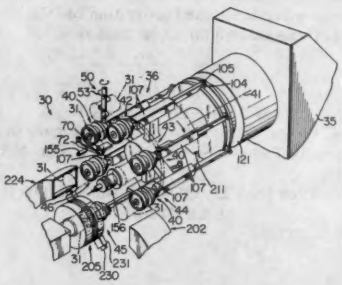
An adjustable die for drawing polygonal tube, rod, bar, or the like having a casing with a polygonal recess therein, a plurality of adjusting wedges arranged one to each side of the polygonal recess, and a plurality of die blocks having a principal angle equal to the principal angle of the polygon and a forming surface disposed substantially perpendicularly to the bisection of the principal angle of the draw block. Each block is disposed in the recess to be primarily supported by an adjusting wedge, and the wedge and block assembly is disposed against a backing plate to be axially supported against the forces of drawing.

3,628,450
DIE ACCELERATOR
Robert W. Schmidt, 5744 West 77th Hill, Oak Lawn, Ill.
Filed Sept. 25, 1969, Ser. No. 860,961
Int. Cl. B23d *25/16*
U.S. Cl. 83—38 **6 Claims**



A method of and an apparatus for controlling the movement of a cutting die to bring it to the velocity of moving material to cut the material into pieces of predetermined lengths. The position of the die is controlled from the start of its acceleration until the material is cut in accordance with the velocity of the moving material.

3,628,451
APPARATUS FOR AND METHOD OF SHAPING WORKPIECES
Hearst McClellan, Henrico County, and Daniel S. Cvacho, Chesterfield County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed May 23, 1969, Ser. No. 827,310
Int. Cl. B44b *5/00;* **B41f** *17/20*
U.S. Cl. 101—4 **34 Claims**

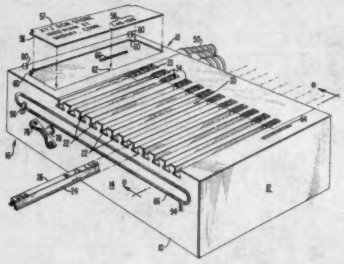


An apparatus for and method of serially embossing workpieces, such as cans, wherein each can is precisely fed to an infeed station where it is grasped while maintaining its sidewall completely accessible and then sequentially indexed to a plurality of stations including an embossing station for precision embossing of its sidewall.

3,628,452
INVOICE AND TAPE PRINTING MACHINE
Charles A. Shaw, 7 Coronet Drive, Columbia, S.C.
Continuation-in-part of application Ser. No. 741,101, June 28, 1968, now abandoned. This application Sept. 23, 1970, Ser. No. 74,777
Int. Cl. B41l *19/00;* **B41f** *3/22*
U.S. Cl. 101—90 **22 Claims**

A multiple sales transaction recording method and device in which a visually readable invoice for the individual

customer is prepared simultaneously with the preparation of a cumulative machine-readable record retained in the device for use by the salesman. In a first embodiment, the products involved are identified by one of a number number of strips inserted in grooves on the upper surface of a housing and the quantity of that product is indicated by individually adjustable printing heads of a register associated with each groove. In a second embodiment, the product strips are positioned on



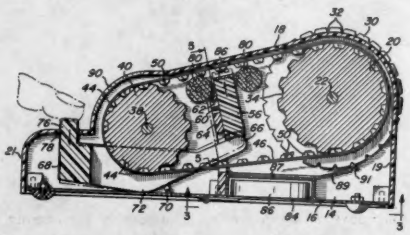
the upper surface of the housing and the quantity of the product indicated by individually adjustable printing heads of a register selectively associated with each product. In both embodiments a credit card may be placed on the upper surface of the housing and a tape advanced from feed and takeup reels mounted for rotation within the housing in printing relation to the register(s), a product identifying code on the strips and a portion of the credit card. An invoice placed in overlying relationship to the strips and the tape is printed in a visually readable font simultaneously with the printing of the machine readable tape.

3,628,453

WORDPRINTER EDUCATIONAL AID

Robert C. Jackson, 2450 Bending Willow Drive; James C. Mueller, 650 Princewood Ave., both of Dayton, Ohio, and Edgar E. Hardy, 3324 Sunnycrest Lane, Kettering, Ohio

Filed Dec. 22, 1969, Ser. No. 886,825
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 **5 Claims**



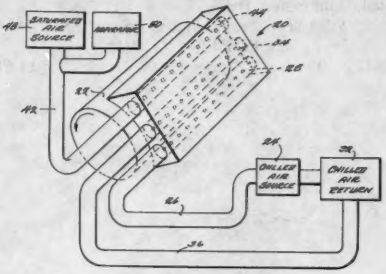
Printer apparatus which is particularly adapted for use as an educational device for teaching children words or the alphabet. A plurality of annular belts or the like are retained in side-by-side relationship, and each belt is individually rotatively movable. Each belt carries a series of character elements on one of the surfaces thereof and a similar series of character elements on an opposite surface thereof. The series off character elements on the opposed surfaces of the belt are arranged so that when a given character element on one surface of the belt is positioned at a print position, a similar character element on the opposed surface of the belt is positioned at a view position. Print receiver material, such as paper or the like, has a portion disposed adjacent the belts to receive print thereupon from the character elements thereof by engagement therewith.

3,628,454

OFFSET MISTER AIR DIE

David H. Eberly, Jr., Fairfield, Conn., assignor to United States Banknote Corporation, New York, N.Y.

Filed July 16, 1969, Ser. No. 842,252
Int. Cl. B41l *25/00*
U.S. Cl. 101—147 **16 Claims**



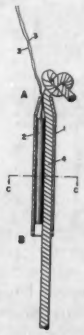
A method and apparatus for transferring moisture to a printing cylinder for use in lithographic and preferably offset lithographic printing. The difficulty of controlling the amount and distribution of water applied to the cylinder is substantially resolved as described below by first impinging on the rotating cylinder chilled, dry air to cool it. The chilled air is then removed and warm, substantially moisture-saturated air is directed to the just-cooled regions of the cylinder to cause water droplets to form and be deposited continuously on the cylinder. By establishing control of the conditions affecting droplet formation, such as the temperature of both the chilled and warm air, the quantities and velocity of both and the relative humidity of the warm air, the droplet size and density can be easily controlled to control the water-ink balance and hence the quality of printed matter produced from the cylinder.

3,628,455

SLEEVE CONNECTOR AND DETONATING ASSEMBLY

Richard G. Nelson, Tamaqua, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Aug. 5, 1969, Ser. No. 847,636
Int. Cl. F42b *3/10*
U.S. Cl. 102—28 **6 Claims**



A sleeve connector for holding an electric blasting gap securely to a detonating cord, the assembly so formed, and

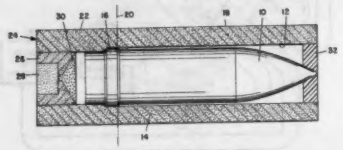
the method of forming it. The sleeve connector is a cylinder having a small opening at one end. The blasting cap is passed through the sleeve connector via the small opening, the detonating cord is passed through and knotted at the small opening, and the blasting cap is retracted into the sleeve connector.

3,628,456

PROPELLANT CHARGE FOR TELESCOPED CASELESS AMMUNITION HAVING A DETERRENT-COATED AFT-END

Joseph I. Harrell, Sussex, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 29, 1969, Ser. No. 861,885
Int. Cl. F42b *5/18, 9/16*
U.S. Cl. 102—38 **11 Claims**



An improved propellant charge for telescoped caseless ammunition is provided. A telescoped caseless round is a caseless round in which the projectile is fully contained within an axial bore in the propellant charge. The propellant charge has a burning rate deterrent applied to its aft-end which results in improved ballistic performance for the round.

3,628,457

ROCKET-ASSISTED PROJECTILE OR GUN-BOOSTED ROCKET WITH SUPPORTED PROPELLANT GRAIN

Ingemar Arnold Magnusson, 4, Ringvagen, Grodinge; Per Tage Marklund, 60, Olshammatsgatan, Bandhagen; Sven Malte Broddner, 65, Tideliusgatan, Stockholm; Lars Ax, 13, Stenvagen, Tumba, and Robert Bert Andersson, 49, Gallerstagrand, Bandhagen, all of Sweden

Filed Dec. 24, 1968, Ser. No. 786,551
Int. Cl. F42b *13/28*
U.S. Cl. 102—49.3 **6 Claims**

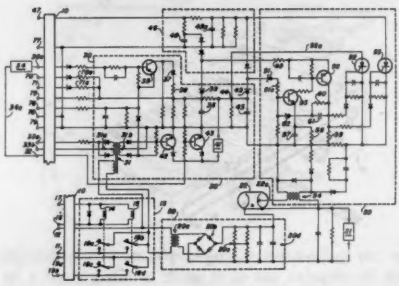
A rocket-assisted projectile having a central supporting tube surrounded by an annular propellant charge, with an annular space between the tube and propellant decreasing in width towards the rear of the projectile. The axial length of the propellant charge is less than that of the chamber containing the propellant to permit elastic deformation of the propellant in the axial direction.

3,628,458

MISSILE DESTRUCT INITIATION ASSEMBLY

Emmett J. Sands, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1969, Ser. No. 879,070
Int. Cl. F42c *11/00, 15/40, 13/00*
U.S. Cl. 102—70.2 R **9 Claims**



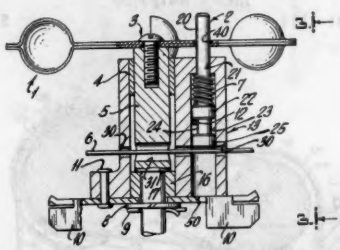
A missile destruct initiation assembly is provided that interconnects a detonator to a high-current source and contains a command destruct circuit for passing a command destruct signal to initiate detonation, and an autodestruct circuit responsive to an autodestruct signal, representative of internal missile malfunction to initiate the detonator. Thus, the assembly for initiating missile destruction performs the dual function of being responsive to a command destruct source or an autodestruct source.

3,628,459

LOCKING DEVICE FOR AIR-DRIVEN BOMB FUSE

Johnie N. Lesikar, Macon, Ga., assignor to Maxson Electronics Corporation, Long Island, N.Y.

Filed May 21, 1969, Ser. No. 826,535
Int. Cl. F42c *15/00*
U.S. Cl. 102—81.2 **5 Claims**



A locking device for an air-driven assembly for arming a bomb fuse used on multiple bomb racks of supersonic aircraft, whereby y the drive assembly is vane driven and incorporates a locking device which prevents all rotational and axial forces created in the driving vane, as a result of turbulent airflow, from being transmitted to the arming wire.

3,628,460

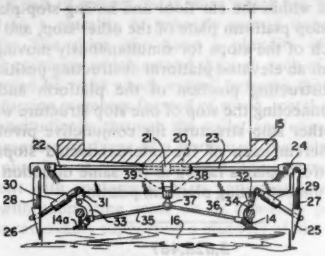
COMBINED TIE AND RAIL GRIPPER

Helmuth Rolf Erich Von Beckmann, 189 Castle Road, Columbia, S.C.

Filed Sept. 15, 1969, Ser. No. 857,901
Int. Cl. E01b *33/02*
U.S. Cl. 104—8 **1 Claim**

The invention provides method and apparatus wherein rail-

road track comprised of two rails secured to a tie is moved



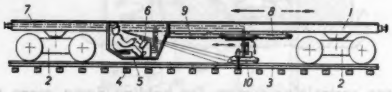
by applying lateral force simultaneously to both one rail and the tie.

3,628,461

MACHINE FOR WORKING ON RAIL FASTENING ELEMENTS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Oct. 13, 1969, Ser. No. 865,886
Claims priority, application Austria, Oct. 26, 1968, A 10453/68
Int. Cl. E01b *29/26*
U.S. Cl. 104—17 R **11 Claims**



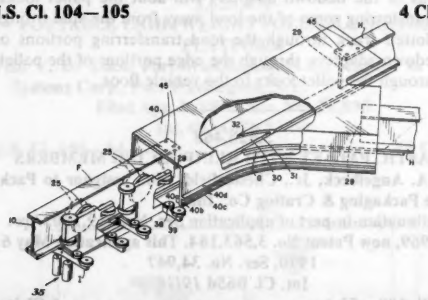
The toolholder of a machine for working on track spikes or bolts is floatingly mounted on its carriage so that the tool can resiliently move into a perfectly centered position in respect of the spike or bolt on which it works.

3,628,462

VEHICLE SWITCHING APPARATUS

William J. Holt, Garland, Tex., assignor to Republic National Bank of Dallas; Irving Trust Company and Union Bank

Filed July 16, 1969, Ser. No. 842,138
Int. Cl. E01b *25/26*; B61b *3/02*
U.S. Cl. 104—105 **4 Claims**



Mechanical route switching means comprise selectively operable trolley members carried by a suspended vehicle and uninterrupted guides supported by a monorail track to be engaged by the trolley members for selecting a designated route from alternate available routes along the track.

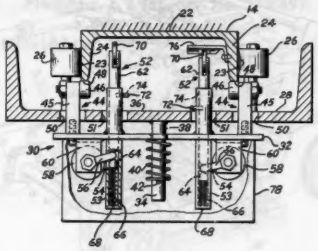
3,628,463

SPEED-CONTROL DEVICE

Gerald M. Kwiatkowski, Dolton, and Paul E. Redelman, South Holland, both of Ill., assignors to Interlake Steel Corporation

Filed Feb. 20, 1970, Ser. No. 13,039
Int. Cl. B61l *3/14*
U.S. Cl. 104—152 **10 Claims**

A speed-control device for controlling the speed of a moveable assembly at a given point in a predetermined path of travel along a guidance rail includes an inclined cam adjacent the point. At least a pair of cam followers are mounted on a support member, which is mounted on and moveable relative to the moveable assembly, so as to engage the guidance rail to establish a first reference plane and the inclined cam which establishes a second reference plane. Both followers are continuously spaced a given distance from each other and are simultaneously moveable as the distance



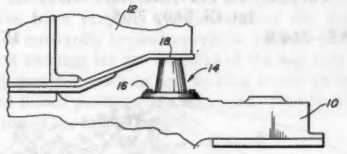
between the assembly and the guidance rail varies to maintain said given distance. When one of the followers contacts the inclined cam, it is moved so as to vary the distance between the respective followers and variably actuate a rheostat to reduce the speed of the assembly.

3,628,464

ELASTOMERIC RAILWAY CAR SIDE BEARING

John H. Van Moss, Jr., Highland Park, Ill., assignor to Vanguard Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 767,450, Oct. 14, 1968, now Patent No. 3,556,503, dated Jan. 19, 1971. This application June 5, 1970, Ser. No. 43,835
Int. Cl. B61f *5/14*; F16c *17/04, 17/08*
U.S. Cl. 105—199 R **5 Claims**



A preloadable side bearing for railroad cars having a formed body portion of hard elastomeric material incorporated in a base which is adapted for attachment to a supporting surface, such as the truck bolster of a railroad car, with provision for an initial reduction in the overall height of the bearing in response to preloading forces and to then absorb substantial loading forces with resulting compressive depression of the body portion and wherein the body portion and base are formed of a material such as polyurethane. The mass is provided with an axial bore for the reception of a rod.

3,628,465

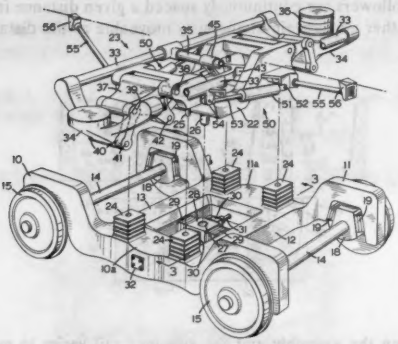
STABILIZING HIGH SPEED RAILWAY TRUCKS

Richard N. Dobson, Burlington, Ontario; Kenneth E. Boyce, Hamilton, Ontario; John A. Gaiser, Stoney Creek, Ontario, and Conrad D. Gris, Hamilton, Ontario, all of Canada, assignors to Dominion Foundries and Steel Limited, Hamilton, Ontario, Canada

Filed Jan. 13, 1969, Ser. No. 790,757
Int. Cl. B61f *3/08, 5/20, 5/24*
U.S. Cl. 105—201 **5 Claims**

In a railway truck a pivot between the truck frame and the cooperating bolster is permitted to have lateral displacement to improve the riding qualities of the truck. The pivot is maintained automatically centered by motor means which

oppose centrifugal forces that would displace the pivot, e.g., while the truck traverses a curve, thereby ensuring that lateral displacement is still possible under such conditions. A special design of such a truck is provided with a bolster comprising two parts, designated upper and lower parts, the



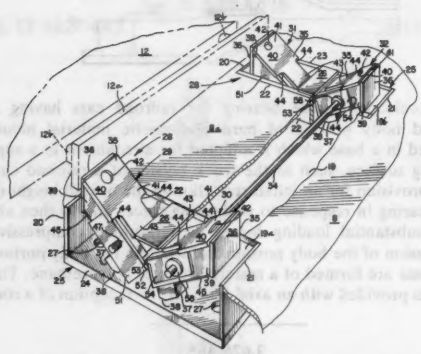
lower bolster part being pivotally mounted on the truck transom, while the upper bolster part mounts the vehicle body for vertical springing movement; the two bolster parts are connected together by an articulated linkage for lateral arcuate movement about a longitudinal tilting axis under the action of motor means.

3,628,466

RAILROAD BOXCAR AND MOVABLE PLATFORM STOPS THEREFOR

Robert W. Lyons, Michigan City, Ind.; Robert R. Parmenter, Chicago, Ill., and James B. Semanick, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 15, 1969, Ser. No. 848,391
Int. Cl. B60p *7/08*
U.S. Cl. 105—366 R **15 Claims**



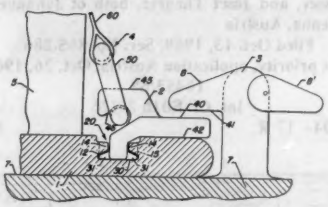
A railroad boxcar having fixed sidewalls at each end of the car and an open central portion enclosed by movable sidewalls and rollingly mounted platforms movable from each end to the central openable portion of the car, stop means retaining each of two platforms in its respective end position or selectively holding each of the platforms in the open central portion, the stop means, including three evenly spaced stop sets in the central portion for holding each of the platforms between two of each stop sets, each stop set including a pair of laterally spaced stop structures for limiting movement of a platform in either direction, each stop structure including a pair of longitudinally spaced pivotally mounted stops recessed within the car floor and having stop plate opposed to the stop platform plate of the other stop, and clutch means on each of the stops for simultaneously moving each stop plate from an elevated platform obstructing position to a lowered unobstructing position of the platform and shaft means interconnecting the stop of one stop structure with the stop of the other stop structure for conjunctive pivoting of each stop wherein each of the interconnected stops have their stop platform plates facing in the same direction in obstructing and unobstructing platform positions.

3,628,467

PALLET RESTRAINING SYSTEM

David A. Stout, New Milford, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 2, 1970, Ser. No. 229
Int. Cl. B60p *7/10*; **B61d** *45/00*
U.S. Cl. 105—369 A **4 Claims**



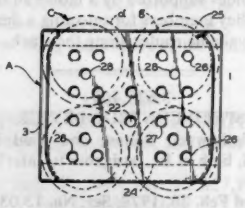
A cargo restraining system for holding down cargo to a pallet and then to a vehicle floor utilizing novel tiedown adapters that have special load transferring capabilities. The system utilizes a pallet which has slotted "holddown" track sections adjacent the edges. Nets or other forms of cargo holding means are attached to the tiedown adapters which in turn are locked into the slotted track section adjacent the pallet locks. Each adapter has a load transferring portion extending between the pallet lock and the top of the pallet. The load transferring capability of the system is manifested when the vehicle is subjected to deceleration forces. At certain deceleration loads the pallet will lift and the load transferring portions of the tiedown adapters will abut the pallet locks, thus transferring some of the load away from the stud fittings and slotted track through the load transferring portions of the tiedown adapters, through the edge portions of the pallet, and through the pallet locks to the vehicle floor.

3,628,468

PLASTIC PALLET WITH REINFORCING MEMBERS

John A. Angelbeck, Jr., Chesterfield, Mo., assignor to Pack-Rite Packaging & Crating Co., Inc.

Continuation-in-part of application Ser. No. 819,130, Apr. 25, 1969, now Patent No. 3,563,184. This application May 6, 1970, Ser. No. 34,947
Int. Cl. B65d *19/18*
U.S. Cl. 108—53 **6 Claims**



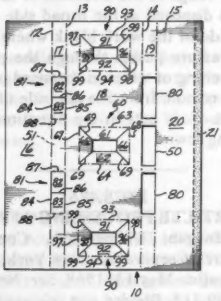
A pallet used for the storage and transporting of containers such as beer kegs and the like. The pallet is formed as a uni-

tary plastic member in a rotational molding operation and includes a pair of spaced outer skins which are internally connected by a plurality of properly spaced webs for internal strength. The skins also have a plurality of strategically located apertures which extend through each of the skins and are formed by webs which extend between the skins. A pair of reinforcing members formed of wood, metal or the like extend longitudinally through the pallet and engage the interiorly presented surfaces of a portion of the skins. The pallet has a plurality of downwardly extending shoulders for engagement with containers on its underface and is also provided with supporting areas on its upwardly presented surface for removably supporting a plurality of like containers.

3,628,469
REINFORCED PALLET

Nicholas R. Neitzke, Lakewood, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 4, 1971, Ser. No. 103,542
Int. Cl. B65d *19/18*
U.S. Cl. 108—56 **5 Claims**

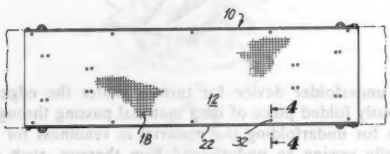


A reinforced pallet, formed of a pair of rectangular tubular members spaced by a channel-shaped member. A rigid foamed resin material capable of holding weight is placed in pockets within the tubular members.

3,628,470
PORTABLE LIGHTWEIGHT FOLDABLE SUPPORT PLATFORM

Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Port Washington, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,895
Int. Cl. A47b *57/00*
U.S. Cl. 108—64 **10 Claims**

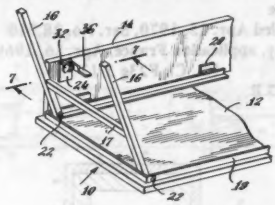


A portable, lightweight and foldable support platform comprising a planar support member and a pair of support leg assemblies secured to the support member at the lateral ends thereof with the support member being fabricated having a core of lightweight, high-strength material, such as a balsa wood composition, and having a plastic layer secured to the underside of said core and a nonskid textured plastic layer secured to the upper surface of the core, the longitudinal sides of the core having aluminum rails secured thereto; the leg assemblies being provided with pivotable hinges to enable the same to be folded flat against the underside of said support member for storage thereof; and the ends of said longitudinal side edges being provided with mating toggle latches to enable adjacent ones of said support platforms to be securedly interconnected to form a support assembly.

3,628,471
FOLDING TABLE WITH INTERLOCKING LEGS AND APRON OR SHIELD

Alan Carleton Burr, East Norwalk, Conn., assignor to Howe Folding Furniture, Incorporated, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,497
Int. Cl. A47b *3/08*
U.S. Cl. 108—132 **4 Claims**

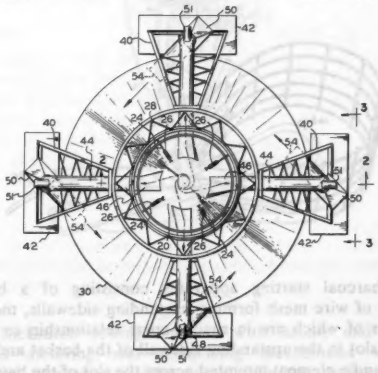


A table or stand has pairs of legs which are mounted along two opposite margins of the top for swinging movement toward and away from each other, and an apron mounted along a third margin of the top and outwardly of the adjacent legs for swinging movement in a direction normal to the swinging movement of the legs, the legs which are adjacent the apron having slots in their inner faces respectively leading to spaces within the legs, and the apron having on its inner surface brackets which each support a rotatable locking member extending laterally of the apron and defining a head which in one angular position can pass through the slot in an opposed leg, and means for controlling the rotational position of the locking member, the legs being moveable outwardly beyond operative position so that on being moved inwardly to operative position the slots in the legs adjacent to the apron will be aligned with the heads of the locking members respectively and will receive the heads if they have been properly positioned, and the apron being moveable outwardly beyond operative position so that when the apron and legs are not interlocked the legs may be swung inwardly past the brackets and locking means carried by the apron, to folded position. The apron may then be folded over and on top of the folded legs.

3,628,472
BURNER CONSTRUCTION

Jerry S. Lausmann, P.O. Box 1608, Medford, Oreg.

Filed Mar. 19, 1970, Ser. No. 21,135
Int. Cl. F23g *5/00*
U.S. Cl. 110—7 R **11 Claims**



A waste burner has a fire pile enclosed by a shell open at the top. A collector is mounted in the shell independently of

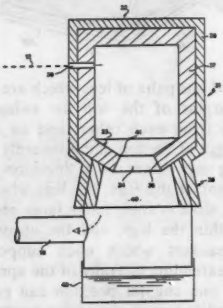
the shell by a skeletal structure which is exterior of the shell and also supports recirculating ducts which draw off gases and unburned particles from the collector. Blowers reintroduce these gases and particles tangentially into the lower portion of the shell. The outlets of the blowers are spaced around the shell and each blower outlet is directed at a point just behind the next adjacent blower.

3,628,473

SEWAGE MUD SLUDGE DRYING AND INCINERATING INSTALLATION

Claude Maille, Sarcelles, France, assignor to Stein Industries, Paris, France

Filed Apr. 15, 1970, Ser. No. 28,710
Claims priority, application France, Apr. 16, 1969, 6911743
Int. Cl. F23g *5/12*
U.S. Cl. 110—7 R **3 Claims**



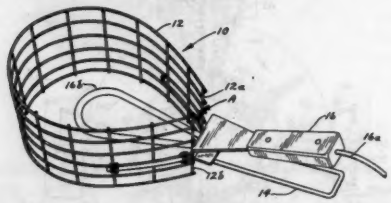
A cyclone furnace for an installation for drying and incinerating mud or sludge such as sewer sludge comprises a vertical cylindrical chamber closed at its upper end and extended downwardly by an internal frustoconical wall. The fuel and air for combustion are introduced, optionally with the material to be incinerated, tangentially into the cylindrical chamber. The waste gases are removed by a duct at the lower end of the combustion chamber. The temperature is sufficiently high to enable the ash to drop from the lower end of the combustion chamber in liquid form.

3,628,474

CHARCOAL STARTING APPARATUS

Charles A. Rehwaldt, 913 6th Ave. S., St. Cloud, Minn.

Filed May 7, 1970, Ser. No. 35,350
Int. Cl. F23b *3/00*
U.S. Cl. 110—1 F **3 Claims**



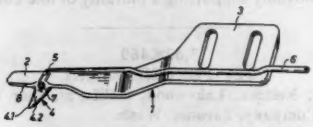
A charcoal starting apparatus consisting of a basket formed of wire mesh forming upstanding sidewalls, the end portions of which are in spaced-apart relationship so as to form a slot in the upstanding sidewall of the basket and having a handle element mounted across the slot of the basket to form a connection between the end portions of the mesh and provide a support for an electric starting device to be removably placed thereon with the electric element thereof extending through the slot.

3,628,475

DEVICE FOR SEWING PLUSH FABRICS OR FURS

Herbert Erb; Erhard Marionek, and Walter Steinbach, all of Kaiserslautern, Germany, assignors to G.M. Pfaff AG, Kaiserslautern, Pfalz, Germany

Filed June 9, 1970, Ser. No. 44,794
Int. Cl. D05b *35/00*
U.S. Cl. 112—149 **4 Claims**



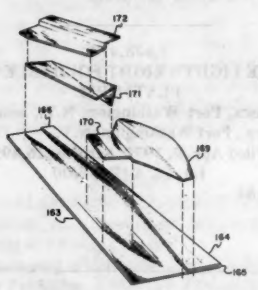
Device for sewing plush fabrics or furs that are covered at the pile or hair side by means of a spur or tail that tapers in the manner of a wedge in the direction of sewing and divides the pile which is disposed at the broad side of a flat support facing the pile side of the work blank where a duct conducting air under pressure passes through the pile divider spur, the discharge opening of which is disposed on the side of the pile divider spur remote from the pile side of the work blank, so that a current of air acts in the direction of sewing upon the material being sewn.

3,628,476

FLAT ARTICLE PROCESSING APPARATUS

Thomas L. Flanagan, Killingworth, Conn., assignor to Wagner Research Corporation, New York, N.Y.

Original application May 13, 1968, Ser. No. 728,664, now Patent No. 3,489,113. Divided and this application Dec. 18, 1969, Ser. No. 886,325
Int. Cl. D05b *35/08*
U.S. Cl. 112—147 **4 Claims**



An underfolder device for turning under the edge of a previously folded piece of limp material passing through the device for underfolding the material in readiness for automatically sewing an underfolded hem thereon, such as on bedsheets and similar articles.

3,628,477

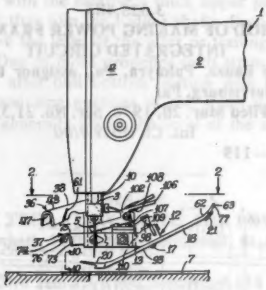
BEAD-FORMING DEVICE FOR SEWING MACHINES

Stanley Habas, 3518 W. Le Moyne Ave., Chicago, Ill.

Filed Feb. 13, 1970, Ser. No. 11,114
Int. Cl. D05b *35/06*
U.S. Cl. 112—151 **10 Claims**

A bead-forming device for a sewing machine comprising an attachment to the foot support of such sewing machine and comprising a material-folding element with a needle guide. A projection extends laterally from the element and

has an undercut guide slot into which one folded edge portion of the bead forming fabric strip is inserted to form an inner flap beneath the projection and an intermediate portion of the strip is passed under the inner flap and folded over the lateral free edge of the extension and forms a top flap which



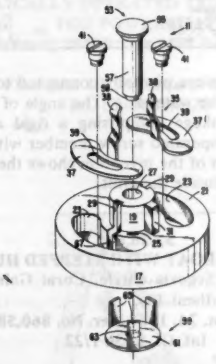
extends over the needle guide. A U-shaped clamp having top and bottom flanges is telescoped over the extension and releasably holds the fabric strip in folded position and continuously folds the strip to form the bead as the strip is advanced during sewing.

3,628,478

MECHANISM FOR SELECTIVELY RETAINING OR REMOVING AN EXCHANGEABLE PATTERN

John C. Seck, Colonia; Howard D. Rogers, Westfield; Thomas G. Graham, Point Pleasan Beach, and James H. Hannen, Jr., Brick Town, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,546
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 **5 Claims**



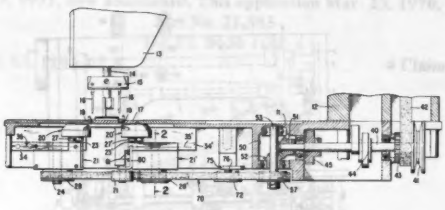
A pattern cam removal device for removing a seated pattern cam upwardly from the interior of a sewing machine to an accessible position. A plunger is slidable axially relatively to the cam shaft and at the lower end of the plunger there is attached a pronged elevator member. When the plunger is raised, the pronged elevator member raises a pattern cam to a position where it is accessible for exchange. A pair of resilient-retaining fingers hold the pattern cam in place on the base portion of the device.

3,628,479

LOOP TAKER SUPPORT FOR SEWING MACHINES

Rudolf Schafer, Karlsruhe, Germany, assignor to The Singer Company, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,062
Int. Cl. D05b *1/08*
U.S. Cl. 112—167 **2 Claims**



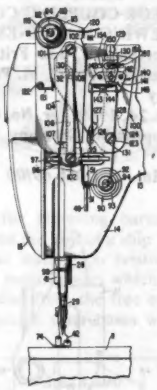
A support for mounting a loop taker saddle in the bed of a sewing machine in which the saddle is formed along opposite sides with parallel channels which slidably embrace and span ways which are secured in the machine bed. The loop taker saddle may be clamped in selected position in the sewing machine bed by a securing screw which is arranged to deflect one of the ways.

3,628,480

LOOSE STITCH FORMING MECHANISM FOR LOCKSTITCH SEWING MACHINES

William C. Van Ness, Parsippany, N.J., assignor to The Singer Company, New York, N.Y.

Filed July 9, 1970, Ser. No. 53,604
Int. Cl. D05b *57/14*
U.S. Cl. 112—181 **11 Claims**



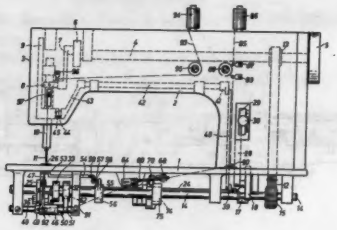
A lockstitch sewing machine with needle and bobbin thread metering and controlling mechanisms whereby selected looseness may be provided in the threads of the resulting stitched seams including the presence of precisely controlled amounts of surplus slack thread in the seam.

3,628,481

AUTOMATIC LOOPER THREAD CONTROL MECHANISM FOR CHAINSTITCH SEWING MACHINES

Helmut Gross, Kaiserslautern/Pfalz, Germany, assignor to G. M. Pfaff AG, Kaiserslautern/Pfalz, Germany

Filed May 11, 1970, Ser. No. 36,333
Claims priority, application Germany, May 13, 1969, P 19 24 283.2
Int. Cl. D05b *1/06*
U.S. Cl. 112—199 8 Claims



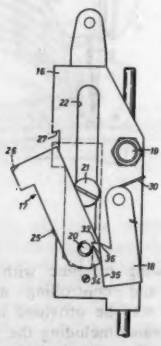
In a double-chainstitch sewing machine having a reciprocatory needle, a thread-carrying oscillating looper, a work feed dog, a stitch controller and an oscillating looper thread takeup lever, the amount of looper thread withdrawn by the takeup lever during a stitching cycle is automatically varied in direct proportion to the stitching length. For this purpose, the takeup lever is operated via a pair of oscillating drives to impart thereto a basic and constant amplitude oscillating movement in one direction from a zero reference position, corresponding to a minimum stitching length, said basic oscillating movement having superimposed thereon an additional oscillating movement increasing in amplitude as the stitching length is increased. The basic oscillating movement of the takeup lever is derived from the main drive shaft of the machine via an eccentric and the additional oscillating movement of the lever is derived, via drive means including a knuckle joint, from the rockshaft of the machine oscillating at varying amplitudes in accordance with the adjustment of the stitch controller and controlling the feed dog displacement in the direction parallel to the sewing direction.

3,628,482

LINKAGE DEVICE FOR COUPLING CONTROL BARS ON SEWING MACHINES

Herbert Wenz, Kaiserslautern, and Fritz Jehle, Alsenborn, both of Germany, assignors to G. M. Pfaff AG, Kaiserslautern/Pfalz, Germany

Filed Dec. 24, 1969, Ser. No. 887,907
Claims priority, application Germany, Feb. 15, 1969, G 6905958
Int. Cl. D05b *69/00*
U.S. Cl. 112—217.4 3 Claims



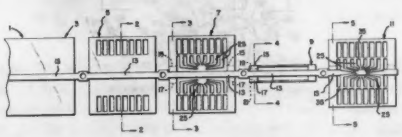
Linkage device for coupling control bars of sewing machines having a coupling motor and a pedal for controlling the speed of the motor, where the linkage has a latching device connected to one bar that provides the connection between the two bars and where when pressure is applied to both bars by way of an abutment element connected to one of the bars, the device is movable out of latched position and operable to restore the latched position.

3,628,483

METHOD OF MAKING POWER FRAME FOR INTEGRATED CIRCUIT

William Vito Pauza, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 20, 1970, Ser. No. 21,328
Int. Cl. H01r *9/00*
U.S. Cl. 113—119 4 Claims



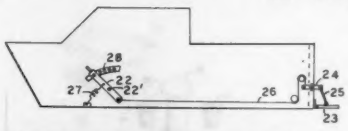
This disclosure relates to power frames for mounting integrated circuits and, more particularly, to a metallic mounting member upon which a semiconductor device may be mounted and connected to form a completed device utilizing automatic equipment for assembly encapsulation, the mounting member including provision for efficient and rapid dissipation of heat produced in the semiconductor device.

3,628,484

TRIM TAB MEANS FOR MARINE CRAFT

Philip M. Banner, 28 Oxford Road, Massapequa, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,476
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 P 1 Claim



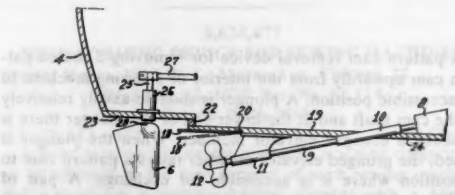
A pair of trim tabs are pivotally connected to the transom of a craft adjacent the water line. The angle of the trim tabs is adjusted by a linkage comprising a rigid member connected to a handle-operated screw member with a universal joint. A modification of the invention shows the control handle means mounted inside the craft.

3,628,485

PLANING BOAT WITH STEPPED HULL

John D. Gill, 2209 Segovia Circle, Coral Gables, Fla., and James R. Wynne, Miami, Fla.

Filed Sept. 24, 1969, Ser. No. 860,589
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 P 14 Claims



A planing boat having a step near the stern, with the bottom aft of the step normally out of water. The boat is pro-

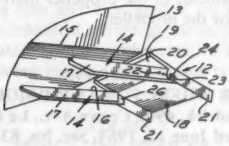
vided with one or more trim flaps attached along their forward edges to the portion of the hull bottom which is forward of and adjacent the step, with the flaps extending aft of the step. A control member for adjusting each flap extends upwardly from the upper surface of the flap through the hull bottom portion which is aft of the step. One or more rudder shafts extend through the hull bottom aft of the flaps and carry rudders with the relatively thick upper portions of the rudders where they join the rudder shafts disposed at a level generally above the level of the after or trailing edges of the flap or flaps. One or more propeller shaft struts may be connected to the after hull bottom portion with the relatively thick upper mounting portions of the struts under the hull bottom being generally above the level of the after edges of the flaps.

3,628,486

AUTOMATIC TRIM ATTACHMENT FOR POWER BOATS

Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.

Filed Jan. 15, 1970, Ser. No. 3,114
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 P **20 Claims**



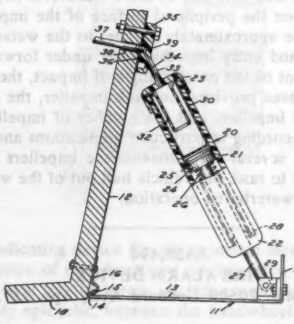
A boat having a pair of trim tabs pivotally mounted rearwardly of the transom on transverse axes intermediate the leading and trailing edges of the trim tabs. The trim tabs are operable at slow speeds to lift the rear of the boat and become inoperable at high speeds.

3,628,487

HYDRAULICALLY OPERATED TRIM ATTACHMENT FOR POWERBOATS

Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.

Filed Jan. 19, 1970, Ser. No. 3,756
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 **22 Claims**



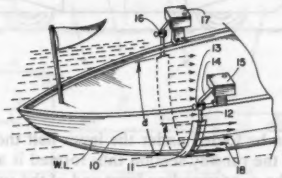
A powerboat including a pair of trim members hinged to the stern of the boat and a hydraulic cylinder individual to each trim member. Each hydraulic cylinder is constructed and arranged so that no external hydraulic lines are needed between the boat and the cylinder. The hydraulic pump has unique features to control volume and pressure.

3,628,488

DILUTED SOLUTION DISPENSING APPARATUS FOR BOATS

Ralph Edminster Gibson, Los Angeles, Calif., assignor to Gibson Associates Incorporated

Continuation-in-part of application Ser. No. 807,881, Mar. 17, 1971, now abandoned. This application Mar. 23, 1970, Ser. No. 21,585
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **4 Claims**



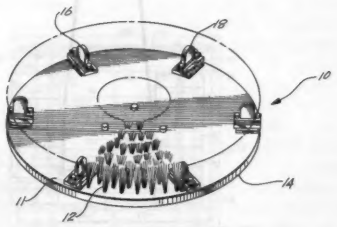
An elongated flexible strip incorporating a longitudinally extending central tube provided with egress openings is arranged to be wrapped about the hull portion of a boat adjacent its bow. A chemical is fed into the central tube and passes out in controlled quantities from the egress openings to thereby form with water passing by the hull a diluted solution which then passes down the length of the hull and thereby reduces the friction of the boat hull when passing through water.

3,628,489

HULL-CLEANING BRUSH

Randolph C. H. Michaelsen, Malibu, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed Nov. 10, 1969, Ser. No. 875,464
Int. Cl. B63b *59/00*
U.S. Cl. 114—222 **6 Claims**



A rotary brush for removing barnacles and other underwater fouling from the hull of a ship. The brush comprises a large wooden disc with nylon bristles and a plurality of resiliently mounted metal blades which have working edges spaced toward the disc from the free ends of the bristles to shear barnacles adjacent their bases without damaging the hull surface.

3,628,490

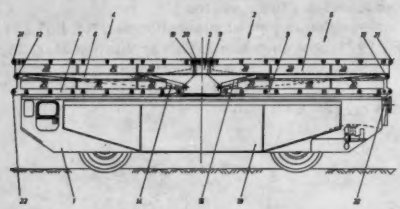
AMPHIBIOUS VEHICLE

Hermann Walter Gehlen, Pirmasenser Strasse 60, Kaiserslautern/Pfalz, Germany

Filed Jan. 8, 1970, Ser. No. 1,393
Claims priority, application Germany, Sept. 30, 1969, P 19 49 206.9
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 B **3 Claims**

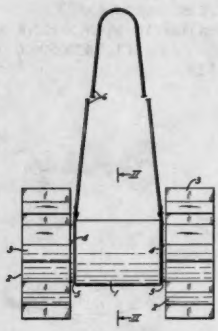
An amphibious vehicle adapted particularly as a part of a floating bridge but also deployable as a ferry having a runway

portion pivotably movable about a vertical axis which at one end is formed as a ramp pivotable relative to the remaining part of the runway about a horizontal axis extending transversely of the direction of travel, where this ramp is subdivided centrally about a horizontal axis that extends again transversely of the runway about which the outer free half of



the ramp can be folded under the inner half thereof and the front end of the runway section thus formed is adapted to be coupled to the corresponding front end of the runway section of an adjacent amphibious vehicle and where the vehicle section pivotable about a vertical axis is also constructed at its other end as a ramp constructed in this manner.

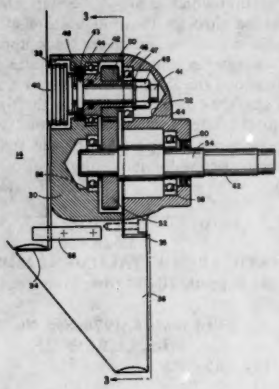
3,628,491
WATER-WALKING DEVICE
William R. Conrad, 1299 Ashland Ave., Columbus, Ohio
Filed Apr. 23, 1970, Ser. No. 31,173
Int. Cl. B63h *5/00, 16/00*
U.S. Cl. 115—2 **3 Claims**



A floating water-walking device has a horizontal cylindrical tread portion joined at its opposite ends to a pair of paddle wheels coaxial with it. Each of the wheels have circumferentially spaced radial vanes and is at least as great in diameter as the tread portion. The latter is large enough to stand on so that if the floating device is rotated by the feet of a person standing on it the paddle wheels will cause it to travel across the water.

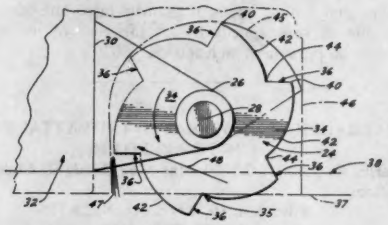
3,628,492
OUTBOARD MOTOR ATTACHMENT
William C. Baldwin, Anaheim, and Theodore N. Meyer, Westminister, both of Calif., assignors to Plasmachem, Inc., Newport Beach, Calif.
Filed Oct. 27, 1969, Ser. No. 870,682
Int. Cl. B63h *21/26*
U.S. Cl. 115—17 **2 Claims**

An auxiliary gear-reduction apparatus to be mountable to the drive shaft of an outboard motor for a boat in place of the conventional propeller, the apparatus reducing the rotational shaft velocity of the power output shaft and increasing



the physical diameter of the propeller thereby increasing the area of thrust for the propeller.

3,628,493
IMPELLER WHEEL FOR AMPHIBIOUS VEHICLE
Edward E. Headrick, 4900 Crown Ave., La Canada, Calif.
Filed June 12, 1969, Ser. No. 832,628
Int. Cl. B60f *3/00;* **B63h** *5/02*
U.S. Cl. 115—19 **19 Claims**

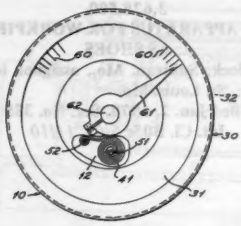


An impeller wheel for a waterborne or amphibious vehicle for providing forward thrust and support for the vehicle. The impeller is provided with one or more transverse impact surfaces raised from the peripheral surface of the impeller angled so as to be approximately parallel to the water surface upon contact and entry into the water under forward rotation. Adjustment of the precise angle of impact, the number of impact surfaces provided on each impeller, the speed of rotation of the impellers and the number of impellers on a vehicle vary according to particular applications and desired capabilities. In several embodiments the impellers generate sufficient force to raise the vehicle hull out of the water during high-speed waterborne operation.

3,628,494
FIRE ALARM DEVICE
Joseph A. Bilotta, 20500 Goddard Ave., Apt. 217, Detroit, Mich.
Filed Dec. 10, 1970, Ser. No. 96,699
Int. Cl. G08b *17/00*
U.S. Cl. 116—102 **2 Claims**

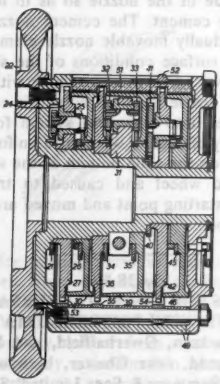
A self-contained independently operable audible-sound fire-alarm device sensitive to dangerously high ambient tem-

perature comprising a spring motor geared to a driven oscillating escapement mechanism pivotally connected to a hammer arm to oscillate the hammer arm against a bell flange to sound the alarm. The hammer arm is normally held silent by a stop leg and an axially movable stop abutting the stop leg. The stop is moved axially out engagement with the stop leg by the angular movement of a wing cam lying in a



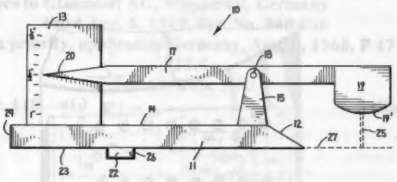
cam groove of the stop. A temperature sensitive bimetal coil angularly moves the wing cam under increased temperature calculated to b3 dangerous to move the stop clear of the stop leg to allow oscillation of the hammer arm against the bell flange. The wing-cam and cam groove on the stop have a low-angle high-mechanical advantage inclined-plane relationship easily operated by and highly sensitive to movement of the bimetal coil when reacting to increased temperature.

3,628,495
INDICATING DEVICES
Leo Hagedorn, Wuppertal-Elberfeld, Germany, assignor to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Germany
Filed Mar. 11, 1968, Ser. No. 712,043
Claims priority, application Great Britain, Mar. 13, 1967, 11,591/67
Int. Cl. B23q *17/00*
U.S. Cl. 116—115.5 **4 Claims**



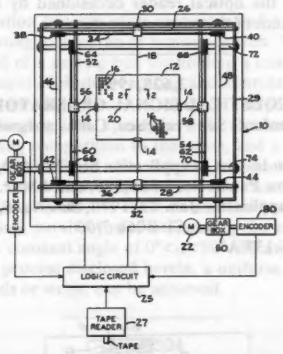
An indicating device for giving metric measurements with a feed screw of inch fractional pitch or vice versa comprises a handwheel for the screw, an index scale and a gear drive, preferably epicyclic, between the handwheel and scale. The ratio of the gear drive provides the conversion. There may be another index scale and another gear drive, the second scale indicating feed in the same measurement system as the screw. Either indicating system may have a supplementary geared scale so that there is a coarse and fine scale for that system. There may be a fine metric scale, a fine inch scale and a combined coarse inch and metric scale, driven by three respective epicyclic gears. One member of each epicyclic gear, normally stationary, may be movable after release of a brake for zero adjustment. The gearing and scales may be within a windowed casing fastenable to a machine, the hand wheel being external to the casing.

3,628,496
HEIGHT GAUGE
Frank J. Schmitt, R. R. #3, Eagle River, Wis.
Filed May 9, 1969, Ser. No. 823,333
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 **1 Claim**



A height gauge for circular saws or any attachment that fits on the saw arbor. An indicator arm pivotally attached to a pair of spaced mounting brackets. The first end of said indicator arm comprises a contact member which is adapted to contact circular objects. A second end forming a needle pointer which is positioned adjacent to a graduated scale. Components all attached to a suitable base.

3,628,497
CONNECTION POINT LOCATING APPARATUS
Franklin D. Neu, 2855 Shane Drive, Richmond, Calif.
Filed Dec. 14, 1970, Ser. No. 97,905
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 **1 Claim**



A connection point locator for the panels of integrated circuits with their numerous connection sockets and/or terminal prongs, comprising a base for attachment of the panel, resilient strings moveably supported from said base in rectilinear condition and at right angles to each other to represent the ordinate and abscissa, respectively, of a Cartesian coordinate system, and means for moving each of said strings over the panel predetermined distances in a direction parallel to the other string while in rectilinear condition, to

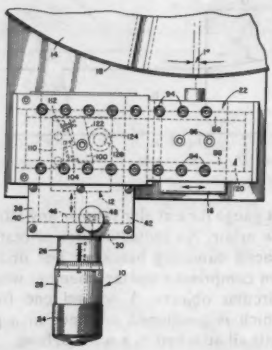
vary the location of their point of intersection which identifies a desired connection point on the panel. According to the invention, said strings are made of resiliently yieldable material, such as rubber, so that they may be moved out of the immediate environment of the discovered connection point, for the operator to establish the desired connection without hinderance and without impairment of the accuracy of the locator in subsequent connection-point-locating operations.

3,628,498

OPTICAL READER ASSEMBLY

Adolph H. Kleinsorge, Affton, Mo., assignor to W. B. Knight Machinery Co., St. Louis, Mo.

Filed Feb. 24, 1970, Ser. No. 13,726
Int. Cl. G01p *13/00*
U.S. Cl. 116—115 **9 Claims**



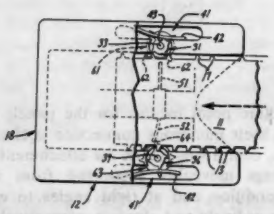
An optical reader assembly for accurately determining the angular position of a rotary worktable or the like regardless of the diameter of the worktable. The position of the optical reader is adjusted by a micrometer with movement of the micrometer stem translated to movement of the optical reader tangentially to the periphery of the worktable. To enable the assembly to be utilized with worktables of different diameters, adjustable cam means regulate the amount of movement of the optical reader occasioned by a predetermined movement of the micrometer stem.

3,628,499

ACOUSTICAL SIGNAL GENERATOR

Konrad H. Benford, San Francisco, Calif., assignor to Bowles-Benford

Continuation-in-part of application Ser. No. 480,449, Aug. 17, 1965, now Patent No. 3,500,326, dated Mar. 10, 1970. This application Jan. 29, 1970, Ser. No. 6,805
Int. Cl. B06b *3/00*
U.S. Cl. 116—137 A **7 Claims**



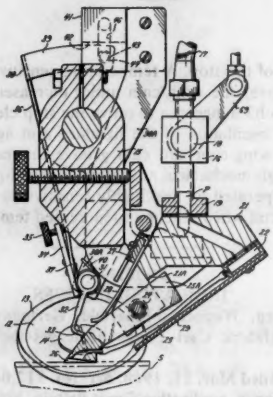
An acoustical signal generator for establishing a serial pulse signal of reference pulses at a given audiofrequency and code pulses at a different audiofrequency wherein the presence or absence of a code pulse between adjacent reference pulses establishes a particular code pattern which can be used for identification and/or control. The generator is mechanically operated requiring no electrical power and constructed for inexpensive mass production and of a size suitable for being conveniently carried by person at practically all times.

3,628,500

CEMENTING APPARATUS FOR WORKPIECES, SUCH AS SHOES

Gordon E. Matlock, Sullivan, Mo., assignor to Brown Shoe Company, Inc., St. Louis, Mo.

Filed Jan. 2, 1970, Ser. No. 355
Int. Cl. B05c *5/02, 11/10*
U.S. Cl. 118—3 **3 Claims**



The apparatus automatically applies a uniform width band of cement about the periphery of the bottom surface of a workpiece, such as a shoe, in response to the positioning of a shoe against the cement nozzle and upon a feed wheel that is located to one side of the nozzle so as to be free of contamination by the cement. The cement nozzle comprises a plurality of individually movable nozzle elements resiliently responsive to the surface conditions of the shoe bottom so that cement will be spread in accordance with the high and low surfaces. The nozzle elements actuate a control follower which is connected into a control system for starting and stopping the supply of cement whereby a uniform band of cement is deposited on the shoe bottom as the shoe is manipulated on the feed wheel and caused to travel about its periphery from a starting point and moved around the sides, the heel and the toe.

3,628,501

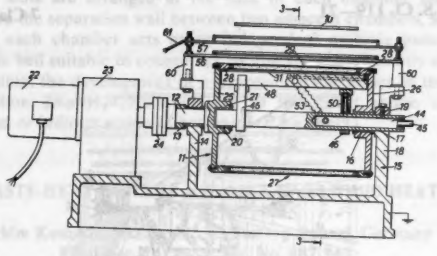
APPARATUS FOR COATING A SURFACE OF A SUBSTRATE WITH POWDERED MATERIAL

Albert Edward Jackson, Gwernaffield, and Robert Gordon Russell, Penyffordd, near Chester, both of England, assignors to John Summers & Sons Limited, Shotton Deeside, England

Filed Dec. 11, 1968, Ser. No. 782,897
Claims priority, application Great Britain, Dec. 15, 1967, 57,096/67
Int. Cl. B05b *5/08*
U.S. Cl. 118—630 **8 Claims**

Apparatus for coating a surface of an earthed substrate with powdered material comprising an earthed dispensing rotor to direct powdered material towards the substrate suc-

cessively through two electrically conducting screens, which are disposed between the dispensing means and the substrate, the screens nearer to the substrate being electrostatically charged, the screen nearer to the dispensing means being electrically isolated and having in operation an electrical



charge induced therein. The rotor has a fluid-permeable curved wall structure filled with porous material the outer periphery of the wall having packets sequentially supplied with powder, fluid being supplied to a portion of the inner periphery which at any moment is angularly spaced from the pockets being supplied with powder.

3,628,502

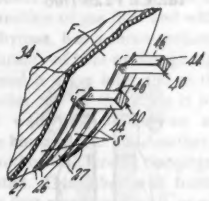
APPARATUS FOR MANUFACTURING ADHESIVE TAPE PRODUCTS

Joseph C. Komp, Bowling Green, Ky., assignor to The Kendall Company, Boston, Mass.

Original application Dec. 11, 1968, Ser. No. 786,815, now Patent No. 3,523,859, dated Aug. 11, 1970, which is a continuation of application Ser. No. 437,813, Mar. 8, 1965, now abandoned. Divided and this application Jan. 23, 1970, Ser. No. 5,310

Int. Cl. B05c *11/10*

U.S. Cl. 118—261 **9 Claims**



Apparatus for making pervious pressure-sensitive adhesive-coated fabric from thermoplastic adhesive and a fabric backing sheet comprising a moving surface for supporting a pressure-sensitive adhesive film, a multiplicity of fixed plough elements transversely spaced from one another with their free ends continuously maintained in pressure contact with said movable surface for separating it into a multiplicity of continuous transversely spaced strips each of substantially greater thickness at its edges than in its central portion and spaced from one another by continuous openings, said surface carrying said adhesive film past said plough elements causing lateral flow of said adhesive moving past said plough elements continuously to form said openings by displacing film material from said openings laterally to the edges of the strips, creating said openings and providing said greater thickness of film at the edges of said strips continuously therealong and means for moving said fabric backing into contact with and thereafter pressing the unsupported surface of said strips while separated by said openings and while supported on their other side by said surface into contact with the surface of said fabric to bond said adhesive strips to said fabric by penetrating said fabric with the material of said strips to a greater degree at the edges thereof providing a greater degree of bonding along the edges of said strips throughout their length while maintaining said openings in their open state to provide a permanently porous pressure-sensitive, adhesive-coated fabric.

3,628,503

APPARATUS FOR COATING WOVEN OR NONWOVEN WEBS

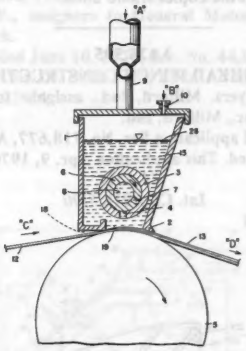
Clemens Neuhaus; Klaus Boehme, both of Erlenbach, and Hermann Gutermuth, Kleinwallstadt, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Aug. 6, 1969, Ser. No. 848,038

Claims priority, application Germany, Aug. 6, 1968, P 17 52 921.4

Int. Cl. B05c *3/00*

U.S. Cl. 118—410 **3 Claims**



The invention consists of an apparatus and process for applying a coating to a woven or nonwoven web. The apparatus is comprised of a casting box for holding a coating material, an arrangement of slotted, rotating and nonrotating tubes for supplying a moving stream of coating composition into a pressure balancing zone above the web, a means for supplying the coating composition to the tubes, and a doctor blade suitably disposed above the web to achieve a coating of uniform thickness. In the process, the movement of the coating composition relative to the web is in the form of periodically recurring, parallel lines, intersecting the center axis of the web at a constant angle of $0°<\alpha<90°$. By utilizing the apparatus and process disclosed herein, a uniform coating, free of color bands or strips, can be achieved.

3,628,504

ADJUSTABLE MOUNTING DEVICE FOR ELECTROSTATIC COPIER DEVELOPER MAGAZINE

Ray S. Richmond, Placitas, N. Mex., assignor to The Singer Company, New York, N.Y.

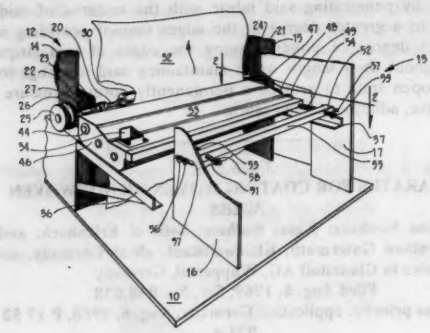
Filed Mar. 23, 1970, Ser. No. 21,609

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **10 Claims**

A mounting apparatus for the developer magazine of an electrostatic copier which enables the developer brush—xerographically sensitive element spacing to be varied across the width of the brush. Two independently adjustable eccentric cams bear upon the rear of the developer magazine to deter-

mine the spacing. A spring-loaded anchor bar is slidably received on spaced guide members secured to the front of



the developer magazine to provide a rearward thrust for maintaining the spacing constant independently of dimensional changes in the copier frame units.

3,628,505

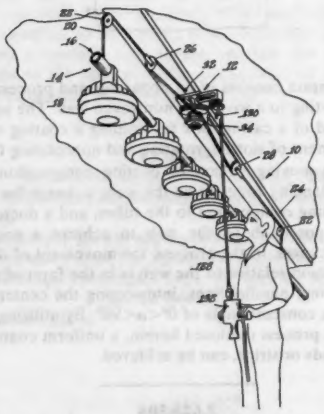
OVERHEAD WINCH CONSTRUCTION

Lawrence A. Myers, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Continuation of application Ser. No. 718,677, Apr. 4, 1968, now abandoned. This application Apr. 9, 1970, Ser. No. 24,431

Int. Cl. A01k *5/00*

U.S. Cl. 119—61 **5 Claims**



There is disclosed a winch construction for vertically adjustably supporting an apparatus such as a mechanical poultry feeder and comprising a frame mountable at an overhead position and having a vertically disposed drum and a drive shaft connected by gearing, automatically operable means for releasably locking the drive shaft, which means and shaft are constructed for enabling an operator located beneath the winch to actuate the winch manually or with the aid of a portable motor or electric drill.

3,628,506

SUCKLING DEVICE FOR CALVES OR SIMILAR YOUNG CATTLE

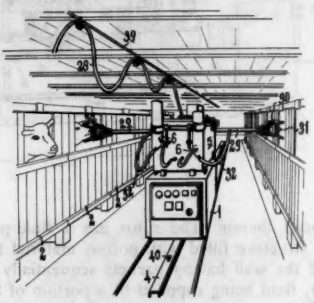
Jan Willem Cornelis Glasbergen, Doetinchem, Netherlands, assignor to Domaf N.V., Doetinchem, Netherlands

Filed Dec. 2, 1969, Ser. No. 881,500

Claims priority, application Netherlands, Dec. 4, 1968, 6817418

Int. Cl. A01k *09/00*

U.S. Cl. 119—71 **7 Claims**



A device for suckling calves and similar young animals, comprising a carriage adapted to be intermittently moved along a row of suckling stations and provided with a supply container, at least one measuring and suckling cup being connected to said container and being vertically movable relative to said container between a lower position in which the supply opening of the cup lies under the (minimum) level of the containers, and an upper position in which said opening is located above the (maximum) level in the container.

3,628,507

LIQUID METAL HEATED STEAM GENERATORS AND SUPERHEATERS

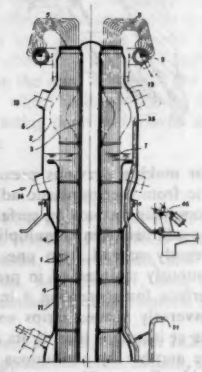
Alfonso Saporiti, Genoa, Italy, assignor to Progettazioni Meccaniche Nucleari S.p.A., Genoa, Italy

Filed Dec. 5, 1969, Ser. No. 882,618

Claims priority, application Italy, Dec. 14, 1968, 7530 A/68

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 **10 Claims**



Saturated or superheated steam generators and superheaters fed with liquid metal, particularly with sodium as a heat transfer medium from a fast reactor or from an inter-

mediate heat exchanger is a nuclear thermoelectric plant, have cylindrically shaped bodies with superposed annular chambers about their lower portions, and around their middle portions if deemed advisable. The annular chambers do not communicate directly with one another but each of them communicates with the interior of the cylindrical body, preferably through a circumferential slot which is horizontally arranged, i.e. normal to the axis of the cylindrical body. The slots are arranged at the base of each chamber just above the separation wall between two adjacent chambers, so teat each chamber acts as an independent multiple pneumatic bell suitable to counteract, as quickly and efficiently as possible, the development of overpressures due either to the reaction $2Na+H_2=2NaOH+H_2$ or to the direct action of steam or indirect action of hot water (flash effect).

3,628,508

WASTE-HEAT BOILERS AND LIKE GAS/LIQUID HEAT TRANSFER SYSTEMS

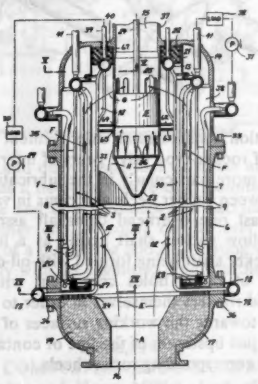
Joachim Kummel, Ickenerstr. 32, Castrop-Rauxel, Germany

Filed Dec. 24, 1969, Ser. No. 887,942

Claims priority, application Germany, Dec. 24, 1968, P 18 17 002.0

Int. Cl. F22b *1/18*

U.S. Cl. 122—7 R **10 Claims**



A waste-heat boiler, for use in a system having two units in tandem in the direction of gas flow and with at least one unit having a valved bypass, has a three-section cylindrical housing in which a plurality of heat-exchange pipes extend axially. At one housing end is a gas inlet and at the opposite end a gas outlet. An outer row of the pipes is welded together to form a gastight wall that defines an annular insulating chamber with the housing interior. Another such circular row of pipes forms another wall having openings at each end near the inlet and outlet. This other wall forms an annular gas chamber with the first-mentioned wall, in which chamber the rest of the pipes are located. A central, axial bypass passage through the boiler is pipe-free and has a valve for blocking gas flow and forcing air through the other chamber. The three housing sections are axially displaceable relative to one another and the two walls are similarly relatively displaceable, the outer wall being fixed to the top housing section.

3,628,509

FABRICATED BLAST FURNACE COOLING PLATE

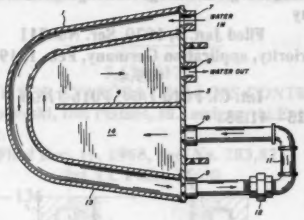
Ronald F. Becker, Pittsburgh, Pa.; Ralph T. Hanna, Atlanta, Ga., and Ernest L. Waterhouse, Allison Park, Pa., assignors to United States Steel Corporation

Filed July 17, 1970, Ser. No. 55,807

Int. Cl. F22b *37/00*

U.S. Cl. 122—6.5 **6 Claims**

A blast furnace cooling plate is constructed by bending a steel pipe into a U-shape to form a first fluid conduit, and welding to it a top, bottom and end plate to form an enclosed chamber, which serves as a second fluid conduit. This second



conduit permits the plate to function even if failure of the first conduit occurs.

3,628,510

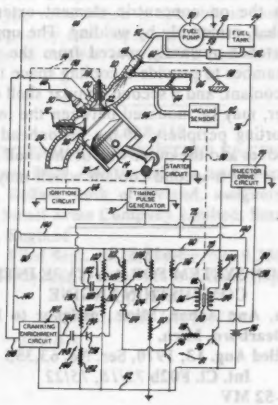
FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE PROVIDING TIMED CRANKING ENRICHMENT

John W. Moulds, Penfield, and Edwin C. Storey, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed June 10, 1970, Ser. No. 44,988

Int. Cl. F02b *3/00*; F02n *17/08*

U.S. Cl. 123—32 EA **7 Claims**



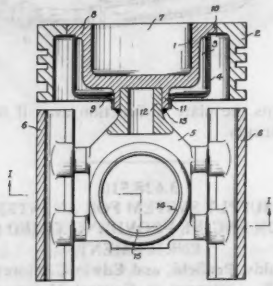
In an electronic fuel injection system, fuel is applied to an internal combustion engine for the duration of individual control pulses developed in synchronization with the rotation of the engine. The engine-starting sequence is divided into alternate cranking periods and resting periods. During each cranking period, additional control pulses are supplied at a frequency which is inversely related to the temperature of the engine. Further, the additional control pulses are supplied only during an enrichment interval. The minimum duration of the enrichment interval is determined as a direct function of the duration of the cranking period. The maximum duration of the enrichment interval is determined as a direct function of the duration of the preceding resting period and as an inverse function of the duration of the previous cranking period.

3,628,511

PISTON FOR INTERNAL COMBUSTION ENGINE WITH DIRECT FUEL INJECTION

Hans Fischer, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany

Filed Jan. 5, 1970, Ser. No. 711
Claims priority, application Germany, Feb. 1, 1969, P 19 05 029.4
Int. Cl. F01p *1/04*; F01b *31/08*
U.S. Cl. 123—41.35 5 Claims



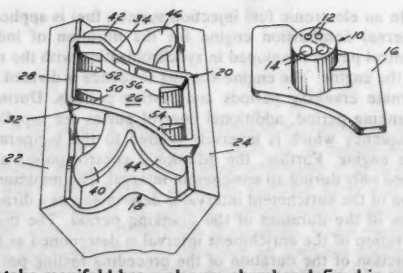
A piston of the type including a pistonhead having a combustion chamber in its upper face and piston ring receiving grooves about its periphery. The pistonhead is machined with a concentric element on its underside adapted to engage a concentric element on a wrist pin bearing frame on which partial skirts or slipper elements are mounted to distribute the transverse thrust of the piston against the cylinder wall. The combustion chamber is surrounded by a shell element through which the on concentric element extends and to which it is sealed, preferably by welding. The upper portion of the shell extends upwardly spaced from the wall of the combustion chamber to provide a cooling space to receive a meltable first coolant, and a second annular shell element, or border member, may be mounted between the inner wall of the ring supporting periphery of the pistonhead below the piston ring grooves and the outer wall of the shell element, to form a chamber for a second coolant which may be the engine lubricant.

3,628,512

INDUCTION SYSTEM FOR A V-TYPE INTERNAL COMBUSTION ENGINE

Tao-Yuan Wu, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 13, 1970, Ser. No. 63,353
Int. Cl. F02b *75/18*, *75/22*
U.S. Cl. 123—52 MV 8 Claims



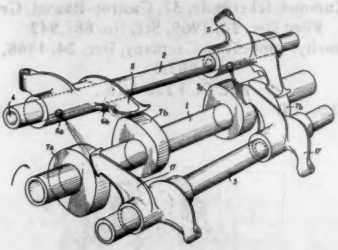
An intake manifold has a plenum chamber defined in part by a floor located substantially perpendicular to and directly below the induction passages of a carburetor. Runners connecting the plenum chamber with the end cylinders of each bank open into the plenum chamber through sidewalls extending above the floor while runners connecting the plenum chamber with intermediate cylinders open into the plenum chamber through the peripheral portions of the floor. The manifold improves fuel and air distribution and also improves driver control over engine torque.

3,628,513

INTERNAL COMBUSTION ENGINE VALVE GEAR LUBRICATION

Albert Grosseau, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed June 19, 1970, Ser. No. 47,795
Claims priority, application France, June 26, 1969, 6921519
Int. Cl. F01m *9/10*, *1/08*
U.S. Cl. 123—90.34 6 Claims



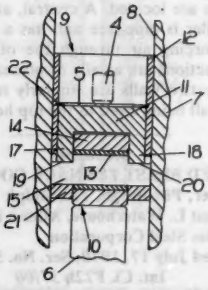
This invention constitutes an improvement in the pressure lubrication of rocker-type valve gears of internal combustion engines, and more particularly in the lubrication of the bearing areas between rocker heels and cams in valve gears comprising at least one overhead camshaft associated with at least one hollow rocker shaft acting as a lubricant supply duct, said rocker shaft being formed with oil-dispensing ports in the form of radial holes coincident with radial holes formed in said rockers themselves in order to form lubricant jets directed towards the working surfaces of said cams in a zone located just upstream of the line of contact between the cams and the corresponding rocker heels.

3,628,514

TAPPETS

Ronald Phillips, Northolt, England, assignor to Simms Group Research and Development Limited, London, England

Filed Jan. 14, 1970, Ser. No. 2,921
Claims priority, application Great Britain, Jan. 23, 1969, 3,754/69
Int. Cl. F01l *1/14*; F16h *53/06*
U.S. Cl. 123—90.48 7 Claims



A tappet assembly including a hollow cylindrical tappet housing a roller assembly carried by a pin, the pin having ex-

tending portions beyond the side faces of the roller and the tappet assembly including a bridge piece having leg portions, which bear upon the pin. The force is transmitted from a cam acting upon the roller assembly to the bridge piece by way of the roller assembly, the extending portions of the pin and the leg portions of the bridge piece. The tappet housing serving only to locate the bridge piece and roller and to guide the movement of same under the action of the cam.

3,628,515

MEASURING DEVICE FOR A FUEL INJECTION SYSTEM

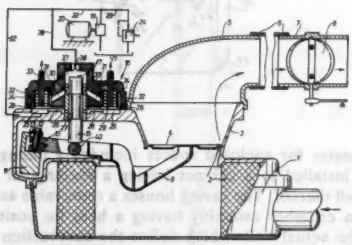
Heinrich Knapp, Leonberg, and Konrad Eckert, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 25, 1970, Ser. No. 75,350

Claims priority, application Germany, Dec. 1, 1969, P 19 60 147.9

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 **8 Claims**



A measuring and distributing fuel valve for an external-ignition engine has a flow-responsive disc mounted in the suction duct at one end of a pivotable arm carrying a counterweight at its other end. A roller on the arm controls the rotatable slider of a measuring and distributing valve and engages frictionally with an eccentric point on the end face of the slider.

3,628,516

INTERNAL COMBUSTION ENGINE CARBURETOR

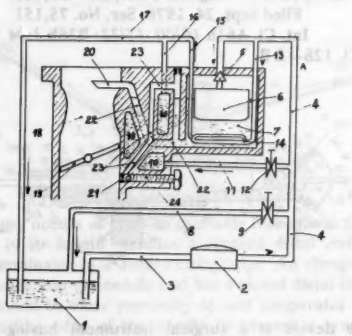
Jean-Louis Perrin, and Henri Milliot, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France, part interest to each

Filed Mar. 10, 1970, Ser. No. 18,043

Claims priority, application France, Mar. 10, 1969, 6906790

Int. Cl. F02m *5/10*

U.S. Cl. 123—136 **3 Claims**



Improvement in internal combustion engine carburetion devices of the type comprising an internal circuit for cooling the fuel, this circuit forming a circulation loop with the fuel tank, characterized in that the cooling circuit comprises a coil tubing mounted within the float chamber and connected in parallel to a fuel-circulation cooling jacket adapted to cool the passages through which fuel is fed to the main jet and idling jet.

3,628,517

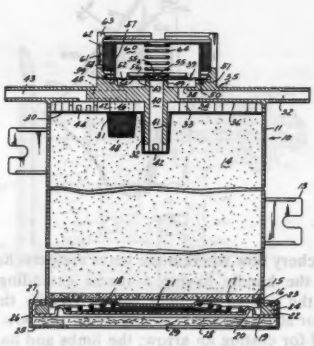
VALVE FOR EVAPORATIVE LOSS CONTROL

George A. Soberski, Des Plaines, Ill., assignor to Eaton Yale & Towne Inc.

Filed Dec. 16, 1968, Ser. No. 783,821

Int. Cl. F02m *25/00*

U.S. Cl. 123—136 **13 Claims**



Apparatus for evaporative loss control employs a single diaphragm-type valve which is operable in response to pressures developed by fuel vapors, ambient conditions and engine vacuum to control evaporative loss in an automobile fuel system.

3,628,518

INTERNAL COMBUSTION ENGINES

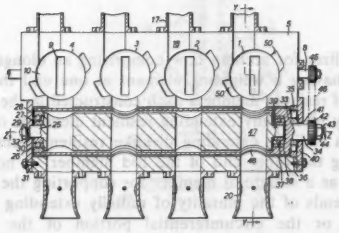
Gordon Purves Blair, Newtownabbey, and Mervyn Bradshaw Johnston, Belfast, both of Ireland, assignors to The Birmingham Small Arms Company Limited, Small Heath, Birmingham, England

Filed Sept. 10, 1969, Ser. No. 9,250

Claims priority, application Great Britain, Sept. 12, 1968, 43,315/68

Int. Cl. F01l *7/00*, *7/12*

U.S. Cl. 123—190 AA **5 Claims**

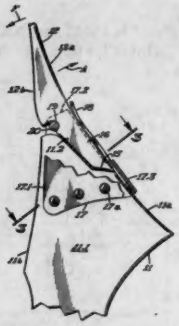


A rotatable sleeve with openings surrounds a stator having passages therethrough disposed in the induction passage of a two stroke cycle engine.

3,628,519
DEMOUNTABLE ARCHERY BOW

Russell N. Hofmeister, Waseca, Minn., assignor to Herter's, Inc., Waseca, Minn.

Filed Nov. 24, 1969, Ser. No. 879,296
Int. Cl. F41b 5/00
U.S. Cl. 124—24 3 Claims

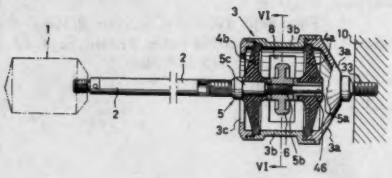


An archery bow wherein the limbs are detachable from the handle; the handle having a recess extending endwise to receive the end of the limb and to rigidify the bow when flexed for stringing the bow and when the bow is drawn and released for casting an arrow; the limbs and handle having a spring-pressed insert and socket-latching device retaining the limbs to the handle when the limbs are relaxed.

3,628,520
STABILIZER FOR ARCHERY BOW

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 25, 1970, Ser. No. 49,806
Claims priority, application Japan, Feb. 21, 1970, 45/16719
Int. Cl. F41b 5/00
U.S. Cl. 124—30 R 11 Claims

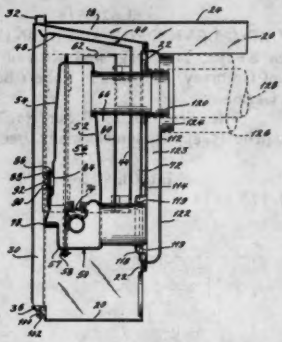


A stabilizer for archery bow comprising an elongated rod member having a weighting element at one end thereof, a number of resilient members each constructed in the form of a plurality of radially extending resilient elements or in the form of a radially extending disklike resilient element, for supporting the other end of the rod member. A housing is provided as a structural member for supporting the radially outward ends of the plurality of radially extending resilient elements or the circumferential portion of the disklike resilient element, whereby when the stabilizer is attached on the archery bow, any shock or vibration created in the archery bow is effectively absorbed and damped out within the stabilizer. In the stabilizer, a screw member for adjusting the tension of the resilient member or members may be further provided between the resilient members.

3,628,521
HEATER FOR ENCLOSED SPACES

Ralph R. Hodges, Belleville, Ill., assignor to Empire Stove Company, Belleville, Ill.

Filed Mar. 2, 1970, Ser. No. 15,684
Int. Cl. F24h 3/00; F23j 11/00
U.S. Cl. 126—85 B 16 Claims

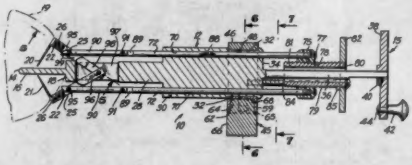


A heater for enclosed spaces includes a casing which is easily installed in a cabinet having a rectangular cutout in one wall thereof. The casing houses a removable sealed combustion chamber assembly having a heat fin positioned behind the actual walls which define the combustion chamber, but in heat-conducting and radiant-heat-absorbing relation therewith. An interior heat shield in the casing surrounds the upper portion of the combustion chamber assembly so that the temperature of the outer walls on the casing does not become excessive, thus enabling those walls to be positioned next to wood and other conventional construction material. A removable airdrop is connected to the backwall of the casing for diverting combustion air from an inlet pipe to the inlet duct leading to the combustion chamber. The airdrop also conveys the flue gases into a flue pipe located within the inlet pipe. The flue pipe and inlet pipe connect with a vent cap which projects only a slight distance beyond the outer wall of the enclosed space. The vent cap enables the burner in the combustion chamber to operate under a wide variety of wind velocity conditions, from a slight wind to a high-velocity wind. Thus, the heater is ideally suited for use in over-the-road vehicles such as trailers.

3,628,522
SURGICAL INSTRUMENT DRILL FOR BIOPSY

Mikio Kato, 1003 Nottingham Place, La Vale, Md.

Filed Sept. 24, 1970, Ser. No. 75,151
Int. Cl. A61b 10/00, 17/32; B26b 3/04
U.S. Cl. 128—2 B 10 Claims



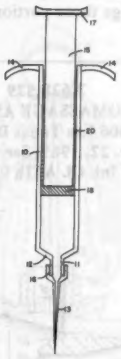
The device is a surgical instrument having a pair of pivotally mounted surgical blades for removing a conical section, which blades are coupled by linkage means so that their angular movement is controlled as the handle means acts as a

sleeve to permit angular rotation of the supporting means with which the blades coact. The linkage means includes a pair of pivotally mounted support arms which in their extended position extend outwardly from the supporting means and in their retracted position partially extend within a slot in the supporting means and in overlapping relation to each other.

3,628,523
SYRINGE

Othel L. Pirtle, Jr., 2718 Stratford, Pearland, Tex.

Filed Dec. 5, 1968, Ser. No. 781,391
Int. Cl. A61b *6/00*; A61m *5/18*
U.S. Cl. 128—2 **4 Claims**



A syringe for the injection of radioactive medicinal and diagnostic compositions into the body, the syringe having a cylindrical body of lead glass with a hypodermic needle attached at one end thereof and at the other end, a plunger of stainless steel for slidable engagement with the inner surfaces of the wall of such cylindrical body, the plunger being coated at least along its surfaces adjacent the wall of the cylindrical body with a coating material which is a resilient polymeric material, rubber or combinations thereof.

3,628,524
BIOPSY NEEDLE

Khosrow Jamshidi, 124 4th Ave. N.W., Faribault, Minn.

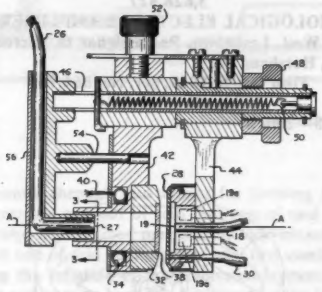
Filed Feb. 28, 1969, Ser. No. 803,199
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **5 Claims**

A biopsy needle of uniform diameter throughout the major portion of its length includes a tapered distal end portion which terminates in a distal cutting edge. An elongate stylet is insertable into the needle and has a closed distal end which is positioned in close proximity to and cooperates with the distal cutting edge of the needle to present a symmetrical closed end to facilitate insertion of the needle into a patient and collection of a biopsy specimen. The stylet and needle are releasably interlocked together whereby upon removal of the stylet, a biopsy tissue will be collected in the tapered distal end portion of the needle. Because of the expanded tapered interior of the needle there is little, if any, compression of the tissue specimen within the needle and therefore little, if any, damage to the tissue specimen.

3,628,525
BLOOD OXYGENATION AND PULSE RATE MONITORING APPARATUS

Michael L. Polanyi, Webster, and David S. Ostrowski, Dudley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed June 19, 1969, Ser. No. 834,735
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R **13 Claims**

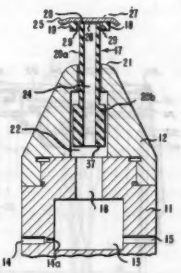


An ear oximeter functioning as a transducer for monitoring blood oxygen saturation and pulse rate comprising an ear clamp having a pair of opposed jaws between which body tissue may be clamped for transillumination by light emitted from one jaw into the clamped tissue. Thermostatically controlled heating means arterializes the transilluminated tissue and light emitter from the tissue is monitored by a photoelectric light-intensity meter for indication of percent oxygen in blood within the arterialized tissue.

3,628,526
PHYSIOLOGIC FLUID PRESSURE SENSOR HEAD

Robert P. Bigliano, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 14, 1969, Ser. No. 815,731
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 E **12 Claims**



A pressure sensing head for measuring physiologic fluid pressure through an elastic body membrane, which is composed of: a membrane depressor-element with a membrane-depressing face adapted to engage the surface of the membrane; a supporting structure containing a pressure-develop-

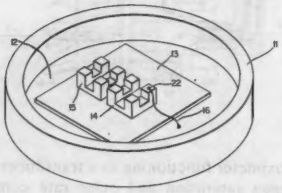
ment cavity, a port for introducing gas under pressure into the pressure-development cavity and a port for measuring the gas pressure developed within the pressure-development cavity; and a feedback chamber formed in the supporting structure and adapted in a manner such that the depressor-element is free to move relative to the supporting structure to vary the free volume of the feedback chamber. The feedback chamber is either an integral part of or connected to the pressure-development cavity and is connected through a passage in the depressor element to the membrane-depressing face of the depressor element. The membrane-depressing face is adapted so that the gas introduced into the pressure-development cavity will be discharged into the atmosphere in a manner such that the discharging gas is throttled by the disposition of the membrane relative to the membrane-depressing face.

3,628,527

BIOLOGICAL ELECTRODE AMPLIFIER

Laurice J. West, Levittown, Pa., assignor to Microcom Corporation, Horsham, Pa.

Filed Oct. 8, 1969, Ser. No. 864,769
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 B **5 Claims**



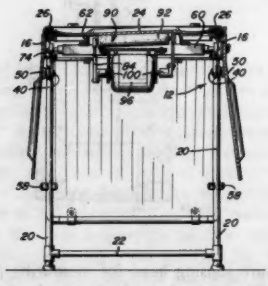
An apparatus is disclosed comprising an electrode for detection of biopotentials, and a high-input impedance, low-noise amplifier packaged with and in direct contact with the electrode, the input terminal of the first active device of the amplifier being epoxy bonded to the electrode. The amplifier is designed with thick film resistors, and without any capacitors, thus minimizing noise generation in the amplifier.

3,628,528

MASSAGING AND REDUCING MACHINE

Ray F. Roberts, Siloam Springs, Ark., assignor to Roll-A-Matic, Inc.

Filed May 21, 1970, Ser. No. 39,303
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **9 Claims**



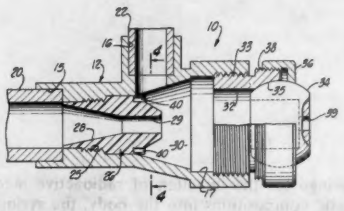
A massaging apparatus including a support panel mounted in taut generally planar condition and including a first face against which a body portion to be massaged may be placed and a reverse face. The apparatus further includes an elongated vibrator member supported in generally parallel relation relative to and in contacting relation with the aforementioned reverse face. The vibrator member is supported for lateral reciprocation in a path generally paralleling the support panel and is also mounted for oscillation about an axis generally paralleling the aforementioned path during or independent of lateral movement of the vibrator along the path with the axis of oscillation of the vibrator member disposed generally centrally intermediate the opposite ends thereof. The massaging and reducing machine is illustrated and described hereinafter as a horizontal table upon which a person may lie in order to massage those portions of the body facing downward. However, the massaging apparatus can be mounted on an incline or in a vertical position, if desired. It is also envisioned that the support panel could be disposed over a person in a prone position with the vibrator member of the massaging apparatus disposed above the support panel and utilized to massage those portions of a prone person facing upwardly.

3,628,529

HYDROMASSAGE ASSEMBLY

Wayne D. Steimle, 8806 Las Tunas Drive, San Gabriel, Calif.

Filed Dec. 22, 1969, Ser. No. 887,108
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **7 Claims**



A hydromassage assembly adapted to be permanently embedded in the sidewall of a pool of water and including a detachable aspirator nozzle of nonmetallic material accessible for assembly and disassembly through the discharge port of the embedded assembly. The assembly is highly resistant to erosion from the action of rapidly flowing water and incapable of reacting to form metallic oxides and the like discoloring agents commonly deposited from the water onto the walls of pools and associated equipment.

3,628,530

INTRAUTERINE DEVICE FOR CONTRACEPTION

Jerome Schwartz, 1321 Club Drive, Hewlett Harbor, N.Y.

Filed Mar. 24, 1969, Ser. No. 809,834
Int. Cl. A61f *05/46*
U.S. Cl. 128—130 **18 Claims**

An intrauterine device (I.U.D.) for contraception is provided which is comprised of a plurality of rodlike members

made of a soft, inert plastic. One end of each of the rodlike members is joined at a common junction to define, in an expanded condition, an upwardly diverging cone having an envelope that is oval shaped in transverse cross section. The rodlike members may be of equal or unequal lengths and may have irregularly spaced nodules formed thereon. A heat soluble gelation cap may be used to hold the rodlike members in a collapsed condition prior to insertion of the I.U.D.

3,628,531

BALANCED-BREATHING PRESSURE SUIT WITH HELMET AND HAND-OPERATED CONTROL VALVE

Leonard Harris, 4935 Joe Blanks, San Antonio, Tex.

Filed Apr. 24, 1970, Ser. No. 31,700

Int. Cl. A62b *7/14*

U.S. Cl. 128—142.5 **3 Claims**

The invention is directed toward improved breathing comfort for an aviator subjected to rarified atmosphere at high altitudes. It employs a vest or jerkin which can be fitted by zipper over a passive pressure unit. The vest has secured to its interior a bladder which extends from front thigh up over the shoulder to the rear thigh position. A standard form of helmet is hermetically sealed to the neckline of the vest. Oxygen under pressure is introduced into the bladder and the helmet through a hand-operated valve which may be secured to the vest. This valve has three positions, (1) "Off," (2) "-Fill" and (3) "Mission Complete" and has a single tubing to the helmet and a double tubing to the bladder. One of the latter is employed for supplying the bladder with gas. The other of the double tubing contains a pressure-operated check valve which closes the passage between the helmet and the bladder in the event of bladder failure. The aviator would normally turn the valve, first to position (1) to supply the helmet with oxygen and to exhaust the interior of the bladder. He would then turn to position (2) which continues the oxygen supply to the helmet, and in addition, would fill the bladder with oxygen at a pressure as would make breathing more comfortable as the higher altitudes are reached. In the event that the bladder becomes punctured with flake or shrapnel and therefore unable to retain the gas, the valve is moved to position (3) to cause the oxygen, in excess of that necessary for the helmet, to escape to ambient atmosphere through the check valve.

3,628,532

ASPIRATION AND RESPIRATION APPARATUS

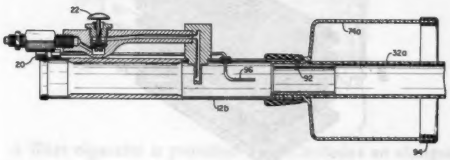
Joseph M. Magrath, P. O. Box 148, McCook, Nebr.

Continuation-in-part of application Ser. No. 663,035, Aug. 21, 1967, now abandoned. This application Feb. 24, 1969, Ser. No. 805,983

Int. Cl. A62b *7/00*

U.S. Cl. 128—145.8 **13 Claims**

An aspiration and respiration apparatus including a unit comprising first and second conduit means, means for connecting each of said conduit means to a single source of pressurized gas, and means for controlling the flow of pressurized gas through each of said conduit means. The first conduit means includes a pair of openings, an inlet disposed intermediate said openings, and means for forming during flow of gas therethrough a zone of reduced pressure, said latter means being disposed intermediate said inlet and a first one of said openings. Each of the first and second conduit means is constructed for connection to a corresponding one of a pair of tubes each of which is adapted to have one end thereof disposed in a trachea of an air-breathing vertebrate whereby pressurized gas and a suitable medication may be introduced into the trachea through said second conduit means and one of the tubes, and whereby matter may be removed from the trachea by the other one of the tubes as a result of the flow of pressurized gas through said inlet into said first



conduit means, through said means for forming a zone of reduced pressure and out of said first one of said openings. The apparatus as described may also include means for closing the first one of said openings and said first conduit means for causing the inflation of the respiration system of a vertebrate for overcoming hypoxia. Additionally, the first one of said openings is constructed to be closeable by the hand of an operator for causing the inflation of the respiration system. The apparatus of this invention may also include a face mask means for enclosing the nasal and oral openings of an air-breathing vertebrate. The apparatus of this invention may also include a means connected to the second conduit means for injecting liquid into at least a portion of said second conduit means and thus function as an irrigator. The apparatus of this invention may also be used in a combination with a catheter to assist in removal of various fluids from the organs of animals.

3,628,533

DOMED-TIPPED APPLICATOR FOR CATAMENIAL TAMPONS

Michael Loyer, South Somerville, N.J., assignor to Johnson & Johnson

Filed Apr. 20, 1970, Ser. No. 29,942

Int. Cl. A61f *15/00*

U.S. Cl. 128—263 **4 Claims**

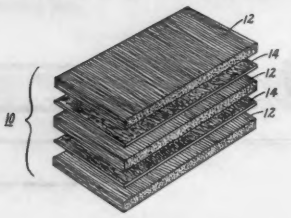
A segmented, domed-tipped, tubular applicator for the insertion of catamenial tampons intravaginally is provided with

sinusoidal curvilinear ribs positioned centrally and extending axially and radially on the inner surface of each of the dome segments to spread the segments apart and permit the tampon to be expelled from the applicator.

3,628,534
CATAMENIAL TAMPON AND METHOD

Francis X. Donohue, Wilbraham, Mass., assignor to Tampax Incorporated, Palmer, Mass.

Filed Feb. 10, 1969, Ser. No. 797,985
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **13 Claims**

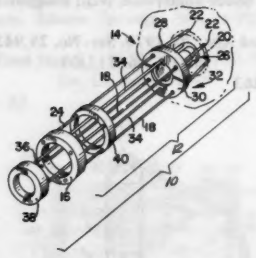


A catamenial tampon incorporating an absorbency improving agent which is a cross-linked polyacrylamide in which part of the amide groups have been hydrolyzed to carboxylate groups is disclosed. The additive is characterized by a high degree of absorptiveness and remains tack-free throughout its absorptive range. A method of making the tampon is also disclosed.

3,628,535
SURGICAL INSTRUMENT FOR IMPLANTING A PROSTHETIC HEART VALVE OR THE LIKE

Efrem Ostrowsky, Highland Park; Bart T. Heffernan, Wilmette, and Aaron R. Best, Wheeling, all of Ill., assignors to Nibot Corporation, Lincolnwood, Ill., by said Best and said Ostrowsky

Filed Nov. 12, 1969, Ser. No. 875,989
Int. Cl. A61b *17/00*; A61f *1/22*
U.S. Cl. 128—303 **6 Claims**

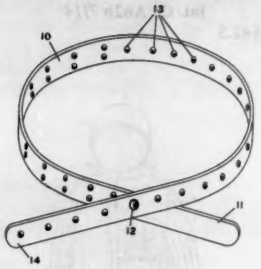


A valve insertion unit for holding a heart valve or like prosthetic device to be inserted within the body, for engaging and spreading an expansible valve-receiving ring previously implanted in the body, for moving the valve into position within the ring, releasing the ring over the valve and releasing the valve from the holder. The valve holder is normally biased opened, fingers are used to spread the ring and are biased to a normally closely spaced-apart position, and movement of the holder along the fingers while portions of the holder engage the fingers expands the ring. When the holder, in an extreme axial position of travel, leaves the ends of the fingers, the ring automatically snaps into position to hold the valve in place within the body and the valve holder releases it grip on the valve so the entire instrument may be removed from the body.

3,628,536
TOURNIQUET

Otto N. Glesne, 1426 N. 12th, Fort Dodge, Iowa

Filed Aug. 15, 1969, Ser. No. 850,530
Int. Cl. A61b *17/12*
U.S. Cl. 128—327 **1 Claim**



A tourniquet for restricting the venous flow of blood is formed by a strip of elastic material having a series of spaced apertures adapted for selective engagement with an upstanding stud for holding the tourniquet tightened around a body member. The apertures are unevenly spaced to compensate for the stretch of the strip so that substantially the same constricting pressure is applied regardless of the size of the body member.

3,628,537
SELF-RETAINING COLD WRAP

Wilbur C. Berndt, and Harry J. Hardenbrook, both of 3419 S. Harlem Ave., Berwyn, Ill.

Filed Apr. 6, 1970, Ser. No. 25,969
Int. Cl. A61f *7/10*
U.S. Cl. 128—402 **9 Claims**

A self-retaining cold wrap for application to an animal or human to relieve a traumatized area, reduce inflammatory edema and pain, among other uses. The cold wrap embodies an outer envelope, an inner container for a volatile refrigerant communicating with the interior of the outer envelope to provide reduced temperature and also pressure

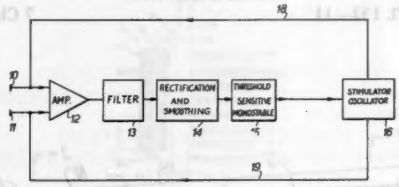
within the outer envelope, a gastight closure for the outer envelope, and means for attaching the wrap to the body of an animal.

3,628,538

APPARATUS FOR STIMULATING MUSCLES CONTROLLED BY THE SAME MUSCLES

Samuel Anderson Vincent, Belfast; Fabian Charles Monds, Newtownabbey, and David Roger Armstrong, Belfast, all of Northern Ireland, assignors to National Research Development Corporation, London, England

Filed Sept. 4, 1969, Ser. No. 855,281
Claims priority, application Great Britain, Sept. 18, 1968, 44,455/68
Int. Cl. A61n *1/36*
U.S. Cl. 128—422 **9 Claims**



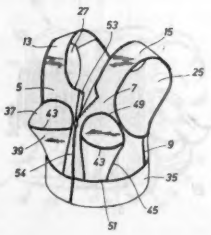
Apparatus for stimulating a muscle, using an E.M.G. signal sensed in the muscle, is described. The signal sensed is amplified, filtered and rectified before being applied to a monostable circuit which, if the E.M.G. signal is greater than a threshold value, enters its quasi-stable state. A stimulator circuit applies a voltage to electrodes adjacent to the muscle while the monostable circuit is in its quasi-stable state but the apparatus reverts to its sensing mode when the monostable circuit is in its stable state, allowing the E.M.G. signal to initiate further stimulation, if required. The apparatus is particularly useful in overcoming incontinence.

3,628,539

MAMMARY SUPPORT

Simon Fredricks, 5111 Contour Place, Houston, Tex.

Filed Feb. 24, 1970, Ser. No. 13,729
Int. Cl. A41c *3/00*
U.S. Cl. 128—427 **8 Claims**



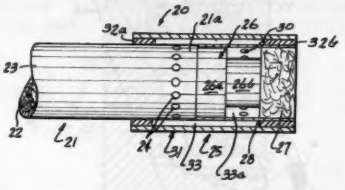
A mammary supportive dressing constructed of uniformly distensible material and having a back panel and front panels, the latter detachably connected to one another for facilitating application and removal of the dressing. Each front panel includes a breast cup means having an upper section of elliptical profile and a lower section of semielliptical profile arranged and connected to one another and to the detachable panels in a manner reducing respiratory restriction and post operative hematoma and seroma formation while at the same time exerting such uniform force as to maintain artificial implants in position during healing.

3,628,540

FILTER CIGARETTE

Joseph H. Sherrill, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 15, 1969, Ser. No. 850,414
Int. Cl. A24d *01/04*; A24f *07/04, 13/06*
U.S. Cl. 131—10.5 **7 Claims**



A filter cigarette is provided which includes an elongated tobacco rod and a filter assembly fixed to one end of said rod. The filter assembly comprises a core piece of smoke-impervious material. The core piece has a large section disposed adjacent to and in axial alignment with the rod one end and a small section which extends downstream therefrom. Disposed adjacent to the downstream end of the small section is a smoke-pervious member. A first sleeve is provided which encompasses the small and large sections of the core piece and said smoke-pervious member. The first sleeve is provided with a plurality of perforations disposed in encircling relation with respect to said core piece small section. A second sleeve is provided which encompasses the first sleeve and connects same to the rod one end. Portions of the first and second sleeves are in spaced relation and define a passageway, one end of which communicates with the rod one and the other end of which communicates with the perforations encircling the small section of the core piece.

3,628,541

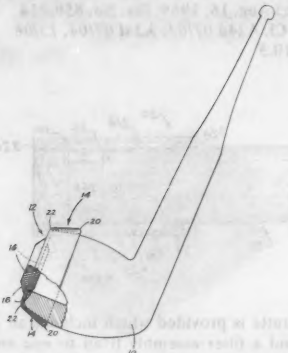
METHOD OF PRODUCING SHAPED TOBACCO PRODUCTS AND SHAPED PRODUCTS PRODUCED THEREBY

Paul Buchmann; Laszlo Egri, both of Basel, Switzerland, and Monique Beringer, St. Louis, France, assignors to Tamag Basel AG, Basel, Switzerland

Continuation-in-part of application Ser. No. 393,410, Aug. 31, 1964, now abandoned. This application Oct. 10, 1969, Ser. No. 865,532
Claims priority, application Switzerland, Sept. 2, 1963, Mar. 5, 1964, Apr. 3, 1964, June 5, 1964; 10817/63, 2851/64, 4241/64, 7367/64.
Int. Cl. A24b *03/14*
U.S. Cl. 131—140 C **8 Claims**

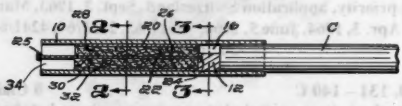
A method is provided for producing shaped tobacco products. Comminuted tobacco material, having an average grain size of up to about 100μ is mixed with an aqueous solution having a pH of about 6 to about 10 and containing, in an amount up to about 15 percent by weight of the tobacco material, a substance selected from the group consisting of inorganic base, organic base, alkali metal and ammonium salts and mixtures thereof to form an aqueous slurry. The slurry is subjected to a temperature of not greater than about 100° C. for a period of up to about 45 minutes to form a pulp. To the resulting pulp is added from about 0.5 to about 3 percent by weight based on the weight of the tobacco of a binding agent. Products are shaped from the resulting pulp and the shaped products are dried at a temperature of from about 60° to about 100° C.

3,628,542
SMOKER'S PIPE COVER
Harry Drew, 1639 Steidl Road, Bend, Oreg.
Filed Nov. 13, 1969, Ser. No. 876,298
Int. Cl. A24f 05/10
U.S. Cl. 131—176 1 Claim



A smoker's pipe cover includes a bowl cap and skirt formed integrally from rubber or other air-impervious, resilient material. The bowl cap has a width sufficient to span the top of the pipe bowl and is provided with a thickened, stiff central portion opposite the pipe bore for insuring proper location of the cover on the bowl. The skirt resiliently engages the exterior bowl surface, detachably mounting the cover on the pipe The central portion is arranged to project away from the opposite surfaces of the skirt such that the cover may be inverted regardless of which surface of the central portion is placed within the upper open end of a pipe bowl.

3,628,543
CIGARETTE HOLDER AND FILTER TUBE
Elliott T. Bemont, RFD 56 Katie Ford Road, Chatham, Mass.
Filed Aug. 20, 1970, Ser. No. 65,634
Int. Cl. A24f 13/06
U.S. Cl. 131—207 6 Claims

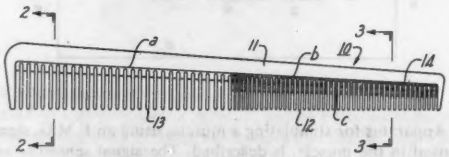


A hollow cigarette holder has a plug near one end which has an opening. A filter tube movably extends into said holder, and a partition therein provides two channels, each containing filtering material, either of which may communicate with said holder opening. When the cigarette is partly consumed, the tube may be rotated a half turn in the holder by turning the partition, and another channel brought into communication with said plug opening, thus presenting fresh filter material to gather the deposit of foul matter as the remaining part of the cigarette is consumed. Both the holder and the tube may be made from transparent material so that the user may discern the degree of saturation thereof.

3,628,544
PERMANENT WAVE-FIXING COMPOSITION AND PROCESS
Gregoire Kalopissis, Paris, and Jean-Louis Abegg, le Perreux, both of France, assignors to Societe Anonyme Dite: L'Oreal
Filed Feb. 28, 1968, Ser. No. 708,765
Claims priority, application France, Mar. 3, 1967, 97388
Int. Cl. A61k 7/10
U.S. Cl. 132—7 5 Claims

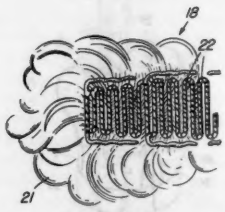
Process of treating the hair comprising first permanently waving the hair with a thio reducing agent and thereafter applying to the hair an aqueous solution containing a neutralizing agent and a water-soluble diimide compound.

3,628,545
HAIR-TEASING COMB
Carl A. Moody, 889 Rolling Rock Road, Pittsburgh, Pa.
Filed Jan. 5, 1970, Ser. No. 722
Int. Cl. A45d 24/00
U.S. Cl. 132—11 7 Claims



A hair comb having a tooth base teasing sector, band or area of a skid-resistant, soft, nonabrasive, flexible, rubber-like, highly adherent reinforcing material.

3,628,546
SECTIONAL HAIRPIECES
Ada Lucille Ensminger, 618 Broadway, Long Branch, N.J.
Continuation-in-part of 627,344, Mar. 31, 1967, now abandoned.
Filed Oct. 13, 1969, Ser. No. 865,868
Int. Cl. A41g 3/00
U.S. Cl. 132—53 8 Claims



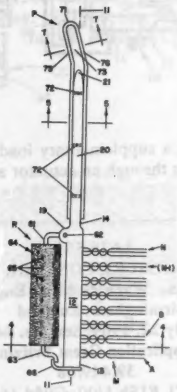
This invention pertains to a narrow, one-piece, lightweight, self-retracting longitudinal frame forming a self-securing base for sectional hairpieces such as wiglets. The base is characterized by a unitary open frame of undulated formation wherein a wefted strip of hair extends at right angles from each undulation. The frame may be bent into any configuration to conform to any portion of the scalp and to angularly insert integral self-securing means into natural hair.

3,628,547

BEAUTICIANS' HAND TOOL

Salvatore J. Catania, 2004 S. 88th St., Omaha, Nebr.

Filed May 5, 1969, Ser. No. 821,738
Int. Cl. A45d 24/00
U.S. Cl. 132—148 6 Claims



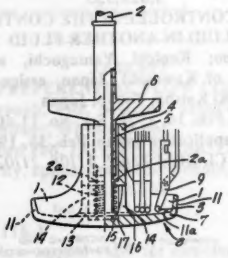
A beauticians' hand tool that is especially useful for the styling of wigs and having tricolumnar comb, combing brush, and T-pin remover features. The tricolumnar comb and combing brush features have similar utility when styling naturally growing human hair.

3,628,548

UMBRELLA

Heinz Seitel, Solingen-Ohligs, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Jan. 13, 1969, Ser. No. 790,750
Claims priority, application Germany, Apr. 3, 1968, P 17 57 134.5
Int. Cl. A45b 25/00, 19/00
U.S. Cl. 135—44 1 Claim



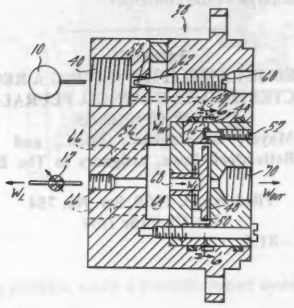
An umbrella having a generally rectangular configuration when folded flat in a collapsed condition; the umbrella including a handle and stick in which the handle is movable downwardly against a normal compression spring pressure which urges the handle recesses into engagement with rib tips of collapsed dome ribs lying along the umbrella stick of the collapsed umbrella.

3,628,549

METHOD AND VORTEX PRESSURE REGULATING APPARATUS

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation

Filed Jan. 20, 1970, Ser. No. 4,387
Int. Cl. F15c 1/16
U.S. Cl. 137—13 14 Claims



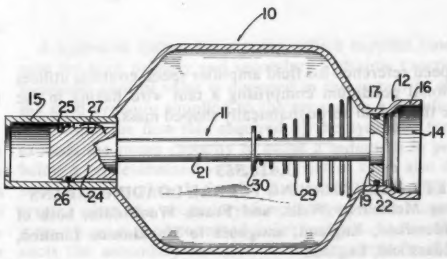
A pressure regulator for maintaining inlet pressure to a fluid device over a range of flow rates to or from the fluid device, using a vortex valve with vertical pressure flow characteristics, connected with the supply inlet in parallel with the fluid device inlet and with a constant control pressure applied. The supply and control flow rates for the given value of regulated pressure are designed so that the range of flow rates experienced because of fluid device inlet flow fluctuations falls in the vertical pressure flow range of the vortex valve. In a second version, the supply and control flow rates are selectively variable so that the pressure regulator may operate in different ranges of regulated pressure values while still operating in the vertical pressure flow range of the vortex valve. A third version provides for pressure regulation at the inlet of an active load element.

3,628,550

BIDIRECTIONAL INERTIA-RESPONSIVE GAS-DISPENSING APPARATUS

John Cirillo, Glen Ridge, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed July 15, 1970, Ser. No. 54,913
Int. Cl. F16k 17/36
U.S. Cl. 137—38 3 Claims



Apparatus for dispensing pressurized gas in response to a front or rear end collision including a container having an outlet opening and an open ended tubular member aligned

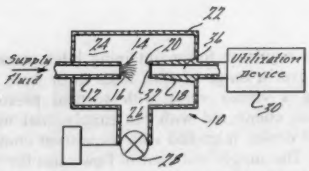
with the outlet providing a second opening. A valve member extending between the openings has a large diameter piston normally sealing the outlet and a smaller diameter piston sealing the second opening. Movement of the valve member in either axial direction moves the large diameter piston out of the outlet to discharge the container. A spring is provided to hold the valve member in the closed position against the differential pressure force acting on the large diameter piston. When the container is rapidly decelerated or accelerated along the axis of the valve member, the inertia of the valve member causes it to be displaced opening the outlet to permit discharge of the container.

3,628,551

CONFINED JET AMPLIFIER HAVING A RECEIVER CHARACTERIZED BY HAVING A PLURALITY OF FLOW OPENINGS

Endre A. Mayer, Birmingham, Mich., and Donald E. Frericks, Bettendorf, Iowa, assignors to The Bendix Corporation

Filed Jan. 5, 1970, Ser. No. 754
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **10 Claims**



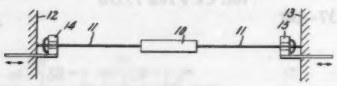
A confined jet fluid pressure amplifier having a receiver comprising a plurality of openings to provide increased gain and reduced noise levels.

3,628,552

FLUID AMPLIFIER TORSIONAL SPEED REFERENCE

Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company

Filed Mar. 27, 1970, Ser. No. 23,255
Int. Cl. F15c *3/00*
U.S. Cl. 137—81.5 **9 Claims**



A speed reference for fluid amplifier speed controls utilizes a torsional pendulum comprising a taut wire having in the middle thereof an aerodynamically shaped mass.

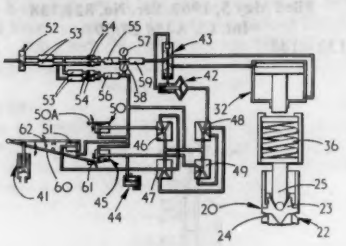
3,628,553

SAFETY VALVE HAVING PLURAL LOADING MEANS

Graham Melbourne Wells, and Frank Wooffindin, both of Huddersfield, England, assignors to Hopkinsons Limited, Huddersfield, England

Filed Nov. 29, 1968, Ser. No. 779,714
Int. Cl. F16k *17/06*
U.S. Cl. 137—81.5 **6 Claims**

A safety valve provided with two loadings on the same valve component to effect instantaneous operation of the valve, with one of the loadings being the normal valve loading, such for example as torsion bars or a spring, and the



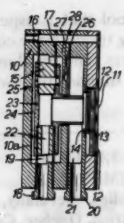
other loading being a supplementary loading which acts on the valve component through an actuator and precompressed spring.

3,628,554

FLUID PRESSURE CONTROL VALVE

Alexander J. Wilson, Warwickshire, England, assignor to Girling Limited, Birmingham, England

Filed July 22, 1969, Ser. No. 843,394
Claims priority, application Great Britain, Aug. 17, 1968, 39,449/68
Int. Cl. F15b *5/00*; G05d *16/00*
U.S. Cl. 137—85 **3 Claims**



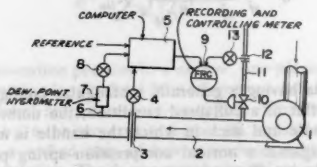
In a valve for controlling relative fluid pressures in first and second spaces of the type described in my U.S. Pat. No. 3,310,350, means are incorporated to control the rate of pressure buildup on the side of the second control member which is subjected to a pressure different from that in the first space.

3,628,555

SYSTEM FOR CONTROLLING THE CONTENT OF ONE FLUID IN ANOTHER FLUID

Yoshihiko Nagano; Kenichi Yamaguchi, and Tomohisa Yamamoto, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

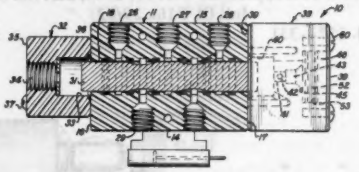
Filed Feb. 16, 1970, Ser. No. 11,403
Claims priority, application Japan, Feb. 15, 1969, 44/10893
Int. Cl. G05d *22/02*, *11/08*, *21/02*
U.S. Cl. 137—88 **6 Claims**



A control system for controlling the content of one fluid in another fluid. The flow quantity of the mixture of the two

fluids is measured and the content of the one fluid in the other fluid is also measured. An electronic computer is used to control the quantity of the one fluid which is to be added to the mixture in order to maintain the content of the one fluid in the mixture at a predetermined value.

3,628,556
AUTOMATIC SPOOL VALVE
John D. Bachman, 1300 Volunteer Parkway, Bristol, Tenn.
Filed Nov. 18, 1969, Ser. No. 877,669
Int. Cl. F15b *11/15*
U.S. Cl. 137—106 **13 Claims**

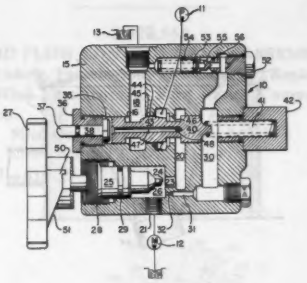


The invention includes the automatic control and actuation of pneumatic four-way five-port pressure-actuated spool valves when used to control the cycling operation of double-acting air cylinders. A built-in two-way spring-loaded pressure-actuated valve functions to open and close a vent leading from the pilot chamber of the spool valves. Supply pressure constantly bleeds from the system supply to the pilot chamber and is vented to the atmosphere as long as the two-way valve is held open by residual pressure from exhaust side of the double-acting air cylinder. When residual pressure reaches zero, the two-way valve is closed by spring action and the pilot chamber becomes pressurized from system supply, thus shifting the spool of the spool valve. When the main spool is thus shifted, the previously pressurized side of the double-acting cylinder becomes the exhaust side and its residual pressure then opens the two-way valve venting the pilot chamber.

In a second form of the invention the system supply is bled into the pilot chamber of a second spool valve to provide sequence programming. A differentiating valve is provided to create a system supply pulse to the second spool valve, permitting it to be recycled while the original system supply pressure remains constant for a period.

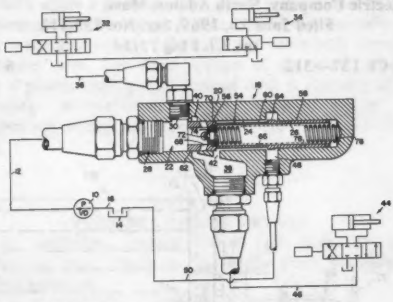
3,628,557
VARIABLE PREFERENTIAL FLOW CONTROL VALVE
Harry Newborough, Fife, Scotland, assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed Feb. 18, 1970, Ser. No. 12,299
Claims priority, application Great Britain, Aug. 15, 1969, 40,823/69
Int. Cl. F16k *31/12*
U.S. Cl. 137—116.3 **6 Claims**

A priority flow control valve for directing a constant flow from the valve inlet to a primary circuit with any excess being directed to a secondary circuit. A cannelured control spool in the valve positions itself responsive to the pressure drop across a variable flow control orifice to proportion inlet flow between the primary and secondary circuits. A control handle for adjusting the variable orifice is provided with a cam which actuates a follower adapted to position the spool in a dumping position when the orifice restriction is reduced to a predetermined size. One additional feature includes a relief valve in communication with a pilot flow in the discharge passage which operates to relieve pressure to permit the pressure acting against the valve spool to move the main valve to



a dumping position when a predetermined system pressure is exceeded.

3,628,558
HYDRAULIC CONTROL VALVE
James Melvin Bahl, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Sept. 2, 1970, Ser. No. 68,984
Int. Cl. G05d *15/00*
U.S. Cl. 137—118 **10 Claims**



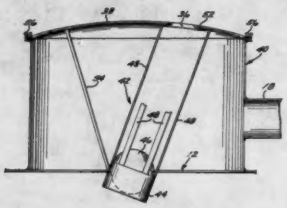
A hydraulic system has a pump, which supplies fluid pressure for both primary and secondary hydraulic functions. A hydraulic control valve is disposed in the system to shut off the fluid pressure supplied to the secondary hydraulic functions when the flow rate required by the hydraulic functions exceeds the pump capacity to cause a reduction in pressure below a predetermined value. The control valve also disconnects the secondary hydraulic function from the rest of the system when the secondary function generates surge pressures above a predetermined value and simultaneously connects the secondary function to the reservoir, so that the valve also functions as a check and relief valve for the secondary function. The valve further automatically connects the pump to the reservoir when the pump is driven at very low speeds and produces a very low-flow rate, such as during starting of the engine which drives the pump, to lessen the load on the starting motor.

3,628,559

ULLAGE OPENING SPILLAGE PREVENTION SYSTEM

Mariani Branko, 663 W. 13th St., San Pedro, Calif.

Filed Oct. 16, 1970, Ser. No. 81,200
Int. Cl. F16k *31/18*
U.S. Cl. 137—202 6 Claims



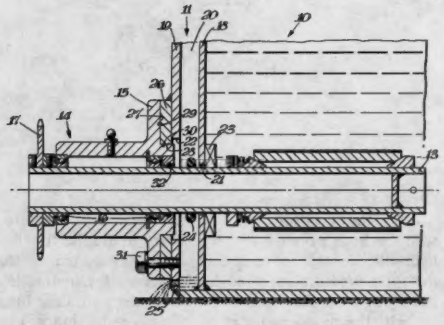
A system for preventing spillage or overflow of liquid cargo through the ullage openings of cargo tanks of a tanker. An elongated guide is provided in the expansion trunk of each of the cargo tanks, the guide being characterized by an open framework which mounts a float for movement toward the ullage opening when the liquid cargo rises in the tank. The float is engageable with a seat adjacent the opening to seal off the opening and prevent cargo spillage occasioned by inadvertent overfilling. The open framework of the guide permits the ullage opening to still be used to insert a probing element into the cargo tank, the guide preferably being inclined from the vertical for this purpose. Conduits are also provided to convey overflow cargo to empty cargo spaces.

3,628,560

SUPPORT AND SEAL FOR A DRIVE MEANS

Robert H. Ettinger, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed June 13, 1969, Ser. No. 833,112
Int. Cl. F16j *15/54*
U.S. Cl. 137—312 6 Claims



A drive for an operation carried on within a fluid contained in a double-walled tank in which a drive extending into the tank in which a drive extending into the tank is supported only at the end of the shaft outside of the tank and is accurately positioned in driving position by the mating of machined surfaces of the support. An annulus around the shaft and rotating with the shaft is positioned on the shaft in the dead space between the inner and outer panels of the tank double wall to prevent seepage through the inner panel from reaching the drive shaft support. A seal against seepage at the outer panel and at the shaft support is eliminated.

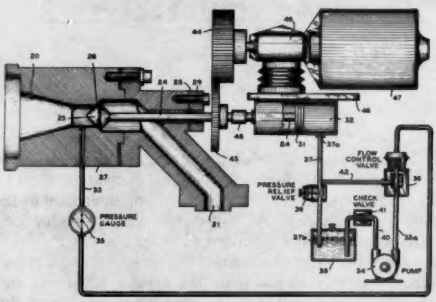
The combined drive shaft and support axially movable, independent of the tank, and quickly and easily mounted on and supported by the tank double wall with the mating of machined surfaces on the support and machined surfaces on the tank providing positioning and aligning of the shaft while the annulus mounted on the shaft is positioned in the double-wall dead space to protect against seepage during subsequent operation of the drive.

3,628,561

VALVE STRUCTURE FOR EXTRUDERS

Herbert O. Corbett, Carrollton, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 396,563, Sept. 15, 1964. This application Dec. 17, 1969, Ser. No. 885,770
Int. Cl. F16k *29/02*
U.S. Cl. 137—331 5 Claims



A servosystem for the valve of a plastic extruder wherein the valve is connected to a fluid pressure means operated from a source of constant pressure; the system includes gauge means for ascertaining the pressure of extrudate passing through said valve and flow control valve means associated with said gauge means and said constant pressure means, said flow control valve means being responsive to any variation in extrudate pressure, as indicated by said gauge means, for automatically adjusting the pressure of said constant pressure means to correct any variation from a predetermined pressure.

3,628,562

CLOSING DEVICE WITH A STOP VALVE WHICH IS SITUATED OUTSIDE THE VALVE HOUSING

Johannis Bruins, Barendrecht, Netherlands, assignor to De Rotterdamsche Droogdok Maatschappij N.V.

Filed Oct. 9, 1969, Ser. No. 865,115
Claims priority, application Netherlands, Oct. 10, 1968, 68.14521
Int. Cl. F16k *17/24*
U.S. Cl. 137—459 5 Claims

A closing device, particularly for use in vessels, comprising:

a. a valve housing having a passage therethrough;

b. a valve adapted to seal said passage through said valve housing;

c. a valve rod passing through said valve housing, connected at one end to said valve, a portion of said valve rod adjacent its other end being threaded;

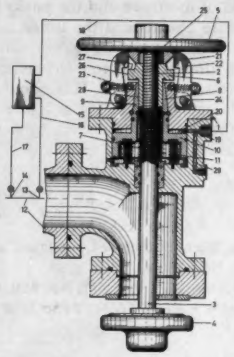
d. a hand wheel connected to the upper end of said valve rod;

e. a valve rod nut threadedly engaged with the threaded portion of said valve rod;

f. a first spring biasing said valve rod not towards said hand wheel;

g. means mounted around said valve and including a flexible part composed of a plurality of claws having an outer surface tapered axially toward said hand wheel, and a rigid part;

h. a second spring biasing said means in an axial direction toward the said hand wheel;



i. a portion of the inner surface of the said valve housing having a frustoconical shape cooperating with the tapered outer surface of said claws adapted to clamp the said valve rod nut in a set position; and

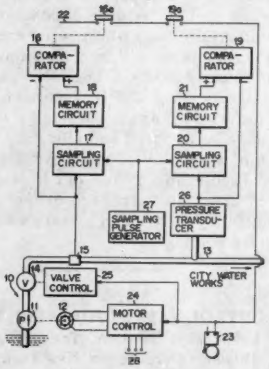
j. said valve housing and said rigid part defining therebetween a chamber adapted to be connected to a pressure source to move said rigid part against said second spring and unclamp said flexible part from said valve rod nut.

3,628,563

EXPLOSION DETECTING MEANS FOR A FLUID PIPELINE

Takehiko Tomita, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 1, 1969, Ser. No. 881,103
Claims priority, application Japan, Dec. 10, 1968, 43/90067
Int. Cl. F16k *17/20*
U.S. Cl. 137—460 **8 Claims**



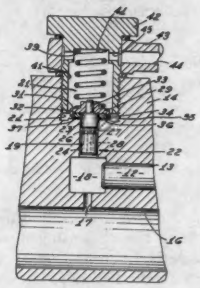
A device for detecting an increase in water flow through a water service main and for detecting the pressure drop existing in the water flowing through the main is disclosed. The device operates when the volume of the existing water flow in the main exceeds by a predetermined value a volume of water flow previously stored in a first memory device during a predetermined sampling period. The apparatus for detecting the pressure drop of the water in the water service main operates when the amplitude of the existing water pressure falls below the water pressure previously stored in a second memory device. The supply of water into the water service main is stopped by the simultaneous operation of both these detecting devices.

3,628,564

FLUID FLOW CONTROL VALVE ASSEMBLY

Irving N. Bishop, Farmington, and Louis L. Repko, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1969, Ser. No. 863,173
Int. Cl. F16k *21/04*
U.S. Cl. 137—516.29 **12 Claims**



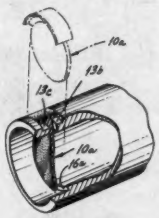
A retraction-type delivery valve assembly for a fuel injection system of an internal combustion engine. The assembly controls fuel flow through and pressure within an adjoining injecting line. The assembly includes a spool valve received in a bore of the valve body and having an enlarged head portion which abuts a portion of the valve body in one direction of movement of the valve. A plurality of substantially concentric microgrooves are formed in the valve body about the spool valve bore. The head portion of the spool valve includes a plastic sealing disc formed with a plurality of corresponding microgrooves that matingly engage the microgrooves of the valve body when the valve assembly is closed.

3,628,565

FLEXIBLE CHECK VALVES

Irvin E. McWethy, Oxford, Ohio, and Bjorn O. Beck, Richmond, Ind., assignors to Philco-Ford Corporation, Philadelphia, Pa.

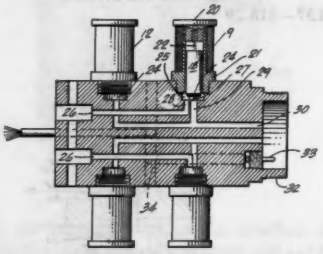
Filed Mar. 3, 1970, Ser. No. 16,095
Int. Cl. F16k *15/16*
U.S. Cl. 137—525.3 **7 Claims**



Check valve apparatus for controlling fluid flow, comprising a flexible "flapper"-type valve member and a tubular

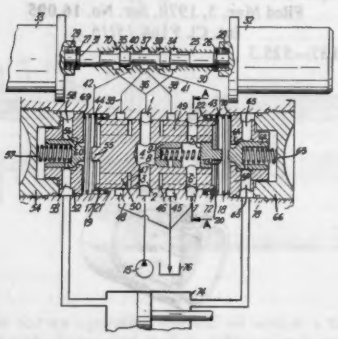
valve-receiving collar including an internal annular valve seat. The collar is apertured around a portion of its periphery to accommodate insertion of the flexible valve laterally of the direction of fluid flow. Mounting of a hose over the collar, and clamping of the hose thereon, provides a seal and completes the assembly.

3,628,566
MULTIPLE FLUID CONTROL DEVICE
Clifford C. Carse, 8880 Kewen Ave., Sun Valley, Calif.
Filed Feb. 2, 1970, Ser. No. 7,841
Int. Cl. F16k *11/20*
U.S. Cl. 137—594 **4 Claims**



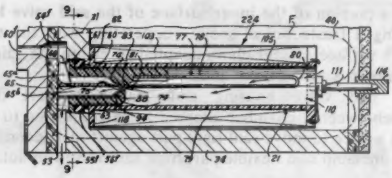
A valve apparatus for a multifluid dispenser which can be located apart from the dispensing head. Flow of each fluid dispensed is selectively controlled by a separate electrically powered solenoid-actuated valve mounted on a valve block having channels therein connected to the fluid reservoirs and the dispensing head. Actuation of a solenoid-controlled valve initiates movement of a paramagnetic core placed within the solenoid coil in such a manner as to open a fluid path from the fluid reservoir to the dispensing head. The core is positionally biased so as to block the fluid path upon deenergization of the solenoid. The particular solenoid valve actuated is selected by a multiposition switch in the dispensing head.

3,628,567
POWER CONTROL VALVE
Alfred Bender, Hofheim, and Horst A. Hornig, Frankfurt am Main, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed June 15, 1970, Ser. No. 46,109
Claims priority, application Germany, June 14, 1969, P 19 30 387.8
Int. Cl. F16k *11/07*
U.S. Cl. 137—596.13 **9 Claims**



A two-stage hydraulic valve system for controlling a double-acting load the system having a three-position first stage valve for supplying pressure medium to pressure chambers on either end of a piston valve slide in a power control valve having twin lift valves for connecting the pressure source to the double-acting load. The lift valves, which are in the ends of the piston valve cylinder connect the load to the pressure chambers when the valves are opened, either by the movement of the piston valve slide against the lift valve, or by the increased pressure in the pressure chamber when the valve slide is at one end of its stroke and the pump pressure is applied to the pressure chamber at the other end of the valve slide. In the neutral position of the power valve there is free circulation of pressure medium from the source to the reservoir through a pressurizing valve. This circulation is cut off when the valve is actuated and the full pump pressure applied to one of the pressure chambers by means of valving passages and ports in the cylinder and slide.

3,628,568
VALVE ASSEMBLY
Donald W. Green, Richardson, Tex., assignor to Dow Jones & Company, Inc., New York, N.Y.
Filed Aug. 14, 1969, Ser. No. 850,134
Int. Cl. F16k *11/14*; F15c *3/00*
U.S. Cl. 137—610 **8 Claims**

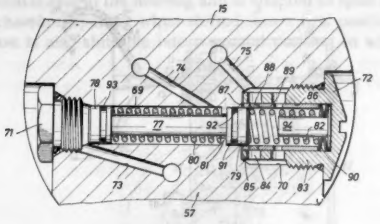


A valve assembly for selectively directing air to either a point of use, such as a nozzle, or to a vent passage, which includes a valve body having a central passage having a restricted portion, a splitter for dividing the passage into two portions and a valve member operatively associated with the splitter and extending into the restricted portion for selectively directing air into either of the two portions of the central passages. The valve member comprises a magnetizable U-shaped resilient valve member having one leg portion fixed to tee valve body and a free leg portion extending into the restricted portion. The apparatus additionally includes an electromagnetic coil or winding disposed about the valve member and the valve body which, when energized, actuates the free leg portion to move it from its normally open nonactuated to its actuated position. The valve assembly may also include a magnetic strip also magnetizable by the current flowing in the winding which cooperates with the free leg portion to increase its speed and efficiency of operation. A combination of a plurality of the above described valve assemblies are disposed in a plenum of a housing into which air is introduced under pressure, each of the valve assemblies selectively directing air to either a vent passage or to nozzles mounted on the housing.

3,628,569
CONTROL VALVES FOR WELL TOOLS
Harold J. Urbanosky, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Original application Dec. 12, 1969, Ser. No. 884,531, now Patent No. 3,565,170, dated Feb. 23, 1971. Divided and this application June 10, 1970, Ser. No. 44,951
Int. Cl. F16k *5/14*
U.S. Cl. 137—625.3 **6 Claims**

The invention disclosed herein is directed to new and improved control valves which are particularly adapted for selectively operating pressure-actuated well tools. In particu-

lar, different embodiments are disclosed of high-pressure control valves which are especially adapted for repetitively



operating at the extreme pressure differentials typically experienced in well bores.

3,628,570

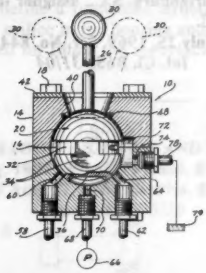
OMNIDIRECTIONAL FLUID-CONTROL VALVE

Allen Richard Andis, 3209 Elwood Drive, Racine, Wis.

Filed Nov. 20, 1970, Ser. No. 91,277

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.23 **4 Claims**



A fluid-control valve having a spherical control member surrounded by a body having a chamber that conforms intimately with the surface of the control member. Fluid passageways are provided on the control member which are alignable with ports in the body when the member is nutated relative to the chamber. Fluid under pressure is thus selectively directed to hydraulic equipment to actuate a ram or other device.

3,628,571

VALVE

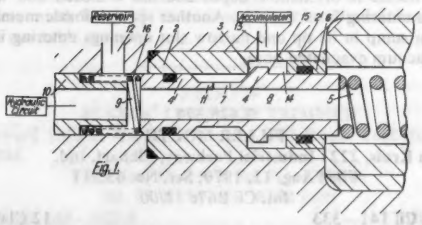
Fritz Ostwald, Buchschlag, and Gerhard Nonn, Hofheim, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,763

Claims priority, application Germany, Mar. 29, 1969, P 19 16 334.9

Int. Cl. F15b *13/04*

U.S. Cl. 137—627.5 **10 Claims**



In this seat valve the flow direction is in opposition to the valve opening and the valve actuator closes a connection between the chamber on the downstream side of the valve and a low-pressure reservoir before lifting the valve from its seat.

3,628,572

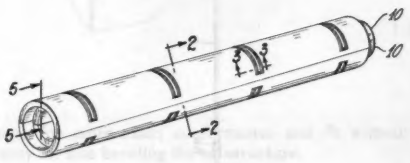
PIPE INSULATION AND METHOD OF INSTALLING SAME

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Dec. 29, 1969, Ser. No. 888,241

Int. Cl. F16l *9/22*

U.S. Cl. 138—161 **3 Claims**



Pipe insulation comprising two abutting blocks of insulation each having a half annular cross section whose central cavity receives the pipe. The leg of each block on opposite sides of the pipe are stepped, and the blocks are held together by C-clips which are positioned in circumferentially extending grooves so that the clips lie beneath the surface of the insulation. The steps of the abutting legs of the blocks preferably have an interference fit which, in some instances, may be slightly Z-shaped so that the blocks are locked together by the spring action of the clips to prevent radiation and convection losses. The end surfaces of the insulation blocks are likewise stepped for dovetailing with endwise located blocks, and preferably have an interference fit therewith to prevent radiation and convection losses by separation therebetween.

3,628,573

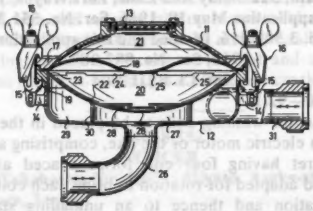
DIAPHRAGM CHAMBER-DAMPING DEVICE FOR DAMPING FLUID SHOCKS IN PIPE SYSTEMS

Willi Loliger, and Rudolf Schmied, both of Konofingen, Switzerland, assignors to Alpura AG, Bern, Switzerland

Filed July 21, 1970, Ser. No. 56,897

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **8 Claims**



The diaphragm chamber-damping device has a dished shell below the diaphragm which cooperates with a separating wall to form a pair of chambers within the liquid compartment while providing for a flow of fluid between the two chambers. One chamber communicates with an inlet pipe while the other chamber communicates with an outlet pipe so that fluid can be passed through the device.

3,628,574

METHOD FOR THE FABRICATION OF WEAVING HEDDLES

Paul Ramseier, Pfaffikon, Switzerland, assignor to Bracker AG, Pfaffikon, Switzerland

Filed Oct. 14, 1969, Ser. No. 866,345
Claims priority, application Switzerland, Oct. 18, 1968, 15590/68
Int. Cl. B21f *45/08*
U.S. Cl. 140—72 **11 Claims**

A novel method is disclosed for fabricating weaving heddles from wire stock by passing the wire through a rolling mill to give the stock a substantially elongated, that is, a comparatively thin and wide cross section. Then a plurality of longitudinal notches are embossed in the stock spaced apart a distance generally equal to the desired length of the heddles, whereupon each notch is spread by means of a wedging tool into an elongated slot to form an eye and there is inserted an eyelet member therein. Thereafter, the individual heddles are cut apart generally midway between consecutive eyes. Each end of the heddle is then formed into a terminal eye by bending between appropriate tool members. The heddles may also be formed from precut sheet stock by bending the ends thereof into terminal eyes by means of tool members generally similar to those used for the wire stock.

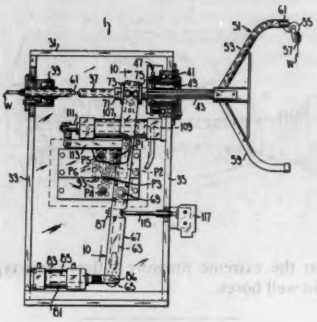
3,628,575

APPARATUS FOR MANUFACTURING WOUND STATORS

Donald E. Hill, 522 Sandy Ann Lane, Fort Wayne, Ind.

Original application May 19, 1966, Ser. No. 551,328, now Patent No. 3,508,316. Divided and this application Dec. 4, 1969, Ser. No. 882,087
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.1 **9 Claims**

Apparatus for winding coils to be placed in the slots of a stator of an electric motor or the like, comprising a rotary indexing turret having four coil forms spaced at intervals therearound adapted for rotation to bring each coil form to a winding station and thence to an unloading station, and means adjacent the unloading station for placing the coils in the slots of a stator. Each coil form has steps for winding a group of coils of different sizes thereon, winding being effected by a flyer which is shifted for winding coils on the different steps, and which may be traversed for level winding the wire. The wire is wound without severing it between successive coils of each group, and without severing it between successive groups, and a group of coils unloaded from the coil form at the unloading station is placed in the slots of a



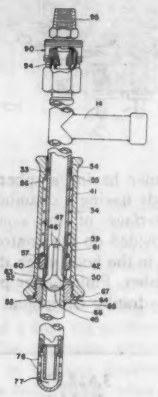
stator while another group is being wound at the winding station.

3,628,576

VACUUM NOZZLE DEVICE

Dave L. Owen, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed July 25, 1969, Ser. No. 844,883
Int. Cl. B65b *31/04*
U.S. Cl. 141—65 **8 Claims**



A manually operated vacuum device for withdrawing air from a package, and positioning the package for closing. The device has only four basic parts that may be disassembled and assembled by hand, a suction tube, a slide tube mounted on the suction tube for reciprocation thereon, a nozzle at the entrance to the slide tube and a valve means trapped between the nozzle and the suction tube for valving the device in response to reciprocation of the slide tube. A special nozzle is of shallow depth and has a closed end with ports entering from the side. Another special nozzle member has a sump in its tip and narrow slot openings entering into its vacuum evacuated bore.

3,628,577

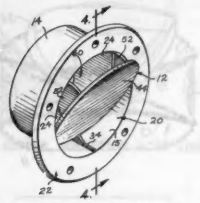
FILLER MOUTH

John Kruis, 2221 Industrial Parkway, Elkhart, Ind.

Filed Aug. 12, 1970, Ser. No. 63,211
Int. Cl. B67c *11/00*
U.S. Cl. 141—333 **12 Claims**

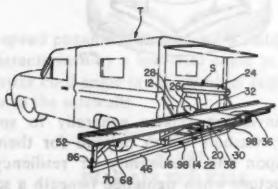
A mouth through which a receptacle for liquid, granular or similar material may be filled including a housing having an

open-ended chamber therein and an orifice located opposite to the chamber opening which is adapted for connection to the receptacle. A closure is pivotally connected about a horizontal axis to the housing and is adapted to span and seal the chamber opening when shifted into a first position. The closure is also shiftable into a second position in which the



upper margin of the closure is spaced outwardly from the housing and the lower margin of the closure projects into the housing chamber, abutting and cooperating with portions of the housing to define a funnellike structure which communicates with the orifice in the housing and into which material may be poured for filling the receptacle connected to the housing orifice.

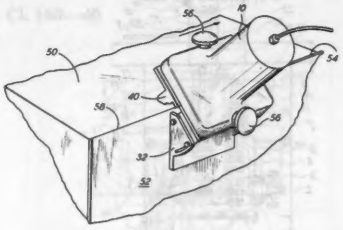
3,628,578
MOBILE RADIAL ARM SAW AND SAW TABLE
Kenneth D. Berg, 10822 Emander Road, Everett, Wash.
Filed Aug. 27, 1969, Ser. No. 853,386
Int. Cl. B27b *5/20*
U.S. Cl. 143—6 A **13 Claims**



Truck mounted radial arm saw and detachable saw table extensions. The saw is mounted on the bed of a truck and with appropriate guide and mounting means is slidable from a position on the bed of the truck to a position which locates it entirely or partially on the tailgate. The saw is locked into position and saw table extensions can be quickly attached to the rear of the truck to extend outwardly to each side of the saw table. The extensions are easily mounted and dismounted. The table extensions connect to the truck and to the saw table proper.

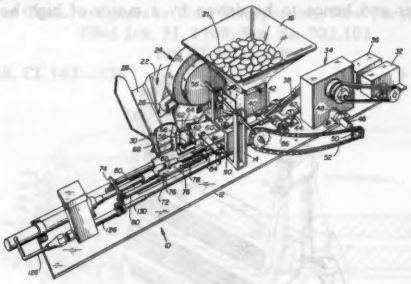
3,628,579
PLASTIC LAMINATE TRIMMER
Edward Noland Roche, 5 Hickory Hill Road, Cockeysville, Md.
Filed Nov. 18, 1969, Ser. No. 877,616
Int. Cl. B27c *5/10*; **B23d** *9/00*
U.S. Cl. 144—325 E **7 Claims**

A novel method and tool for fitting laminate to substructure is disclosed. The provision of pad gauges to a motorized routing tool operating at a beveling angle allows the tool to follow assembled substructure and bevel the edge of the



laminate for more exact conformance and fit without the necessity for also beveling the substructure.

3,628,580
NUT-CRACKING MACHINE
Zachary L. Langston, Rt. 2, Box 66, Locust Grove, Okla.
Filed Jan. 7, 1969, Ser. No. 789,471
Int. Cl. A23n *5/02*
U.S. Cl. 146—12 **4 Claims**

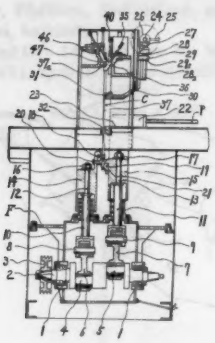


A nut-cracking machine which includes vacuum pickup means to position a nut in nut-cracking means operably interconnected with said vacuum pickup means, said nut-cracking means including hydraulic means to automatically adjust the nut-cracking means to the size of the nut and also provide stop means for a nut-cracking die of the nut-cracking means.

3,628,581
SLICER
Katsushi Takahashi, No. 1,021, Miyato, Asaka-shi, Saitama-prefecture, Japan
Filed Dec. 10, 1969, Ser. No. 883,807
Claims priority, application Japan, Dec. 21, 1968, 43/93446
Int. Cl. B26d *4/02*
U.S. Cl. 146—153 **2 Claims**

A slicer having two groups of knife blades, each group formed by a plurality of blades, secured side-by-side in two pairs of blade holders. Each pair of blade holders secures one group of knife blades and is provided with a groove between

each blade of the supported group through which a blade of the other group of blades passes to define a very narrow



opening between adjacent blades. The groups of blades are reciprocated in opposite directions to perform the slicing.

3,628,582

GRAIN-POLISHING MACHINE

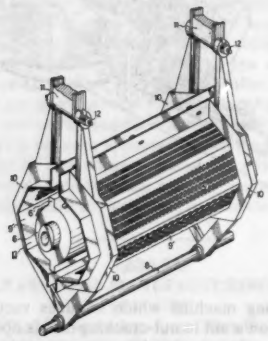
Toshihiko Satake, No. 2-38, Nishihonmachi, Saijyo-Machi, Kamo-gun, Hiroshima-ken, Japan

Filed Dec. 22, 1969, Ser. No. 887,241

Int. Cl. B02b *3/08*

U.S. Cl. 146—279 H **2 Claims**

A grain-polishing machine having a grain-polishing chamber of a cross-sectional configuration with more than six angles, which allows a grain-polishing roller rotatably mounted within said chamber to be of a comparatively large diameter and hence to be driven by a motor of high hor-



sepower, whereby its polishing efficiency is considerably increased compared to a conventional grain-polishing machine of the kind.

3,628,583

HANDBAG WITH DUAL-SECURING MEANS

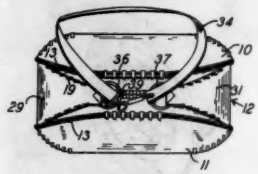
Herman H. Poelman, 1615 Rapids Drive, Racine, Wis.

Filed Aug. 28, 1970, Ser. No. 67,805

Int. Cl. A45c *3/00*

U.S. Cl. 150—33 **8 Claims**

A handbag having two spaced-apart side panels and a center section attached to the side panels, all for forming the exterior of the bag and providing the enclosure of the contents in the bag. The center section is provided with a first type of closure, such as a zipper, and it is also provided with a second type of closure, such as flaps which extend over the zipper and provide additional security against theft and spillage. Further, the flaps are extended along the center section to conceal the zipper and enhance the appearance of the bag. The center section is slightly recessed with respect to the peripheral edges of the side panels, so the side panels serve as supports for setting the bag on a surface. Also, the side panels are shaped in a bowed or curved shape to provide



maximum capacity for the bag, and the side panels can be arranged to appear to be the form of an object, such as a football, in the embodiment in the disclosure. Still further, the bag is provided with a strap which is connected to the flaps for holding the flaps in the secured position, and the strap may be in a latched position with the flaps and it may be released from the latched position and moved between a handhold position and a shoulder-hold position.

3,628,584

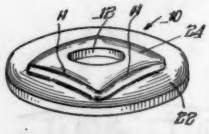
SPRING WASHER

Charles E. Gutshall, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 18, 1969, Ser. No. 886,319

Int. Cl. F16b *39/24*

U.S. Cl. 151—38 **8 Claims**



The present invention relates generally to spring-type washers, namely; washers which depend for their locking characteristics upon the yieldability or resiliency of the washer body structure when tightened beneath a screwhead or nut. The present application discloses an embodiment of the invention which includes an annular washer body comprising inner and outer marginal sections which are substantially conical in axial cross section. The inner section extends axially outwardly beyond the first section and the periphery thereof defines a multisided structure in the form of a polygon which is spaced radially inwardly of the periphery of the outer marginal section. A circumferentially continuous, rigid strut section integrally joins the aforesaid inner and outer marginal sections of the annular body.

3,628,585

PNEUMATIC TIRE CONTAINING A SEALANT

Henry A. Pace, Akron, Ohio, assignor to Goodyear Tire & Rubber Company, Akron, Ohio

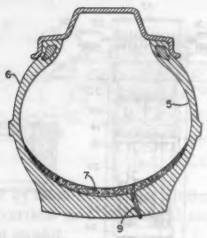
Original application Sept. 9, 1963, Ser. No. 307,556, now Patent No. 3,361,698. Divided and this application Nov. 8, 1967, Ser. No. 681,964

Int. Cl. B60c *17/00*; **C08g** *41/00*; **C08k** *1/44*

U.S. Cl. 152—347 **1 Claim**

This invention relates to a tubeless pneumatic tire casing having an integral air-retaining liner which contains a puncture sealant composition inside said casing, said puncture

sealant comprising polyurethane elastomers, an inert mineral powder dispersed in a solvent consisting of dimethyl sulfox-

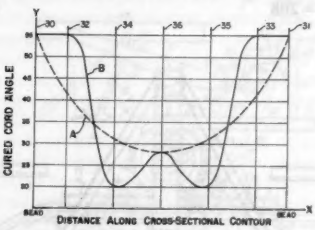


ide, dimethyl formamide, dimethyl acid amide and mixtures thereof.

3,628,586
PNEUMATIC TIRE

Walter W. Curtiss, Brimfield, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 17, 1969, Ser. No. 877,336
Int. Cl. B60d 9/02
U.S. Cl. 152—356 **7 Claims**



A high-speed pneumatic tire having a stable dynamic tread profile characterized by a low-cord angle in the crown area, an even lower cord angle in the shoulder regions, and a high-cord angle in the sidewalls.

3,628,587
BIAS-BELTED TIRE

Kevin B. O'Neil, 4360 Hohman Circle, Akron, Ohio; Cameron R. Fraser, 2215 Winter Pky., Cuyahoga Falls, Ohio, and Paul E. Helms, Jr., SN 527605212 HHC USAA RENBD, Fort Knox, Ky, assignor to Goodyear Tire & Rubber Company, County of Summit, Ohio

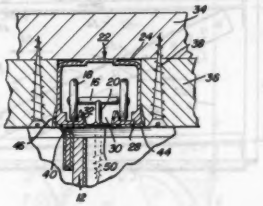
Filed Apr. 22, 1970, Ser. No. 30,733
Int. Cl. B60c 9/18
U.S. Cl. 152—361 **8 Claims**

A bias-belted pneumatic tire having a particular combination of reinforcing belts including a polyester cushion sandwiched between belts of fiberglass.

3,628,588
TRACK SEAL FOR FOLDING DOORS WITH ALIGNED SEAL FLAPS

Guy E. Dixon, Miami Shores, Fla., assignor to Panelfold Doors, Inc.

Filed Aug. 26, 1969, Ser. No. 853,160
Int. Cl. E06b 7/16
U.S. Cl. 160—40 **4 Claims**

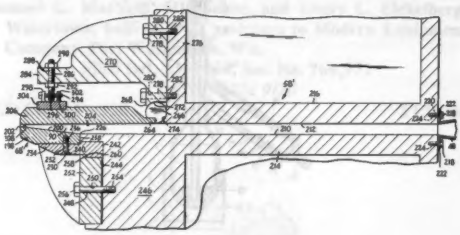


A continuous flexible seal for the entrance slot of a channel-shaped track supporting a folding door therefrom whereby the supporting rods for the door extending through the entrance slot of the track will be sealed by a pair of opposed and aligned flexible sealing strips having adjacent edges substantially in engagement with each other throughout their length to preclude communication between the two sides of the door by sound and air entering the track on one side of the door and exiting on the other side thereof.

3,628,589
FLOW SYSTEMS

John A. Means, Norwalk; Kenneth B. Latimer, Westport; James Moran, Norwalk, and Paul J. Thoma, Westport, all of Conn., assignors to Time Incorporated, New York, N.Y.

Filed Jan. 31, 1968, Ser. No. 702,101
Int. Cl. D21f 1/06
U.S. Cl. 162—336 **3 Claims**



Paper stock flows through a header, a first flat channel, flexible hoses, expansion pipes, pipes of changing cross section, a second flat channel, and a slice nozzle. The nozzle lips are substantially rigid, and conventional sizing across the nozzle orifice is obviated. The structure facilitates ejection of stock from the nozzle in a controlled manner so that the stock remains intact as a wide flat jet a substantial distance beyond the nozzle.

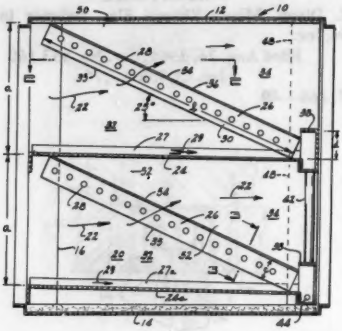
3,628,590
AIR COOLER HAVING MULTIPLE COOLING COILS

George R. Knebusch, North Olmsted, Ohio, assignor to American Standard Inc., New York, N.Y.

Filed Nov. 19, 1969, Ser. No. 877,954
Int. Cl. F25d 21/14
U.S. Cl. 62—290 **5 Claims**

An air cooler comprising two parallel finned heat exchange coils acutely angled to the direction of airflow and located

within a rectangular duct housing, each coil having a drain trough at its downstream edge. By angling the coils it is possible to provide greater total fin face area, a lower air velocity through the coils, a higher heat transfer, and less pressure drop in the airstream.

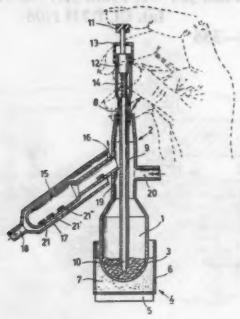


3,628,591

METHOD OF MANUFACTURING A MATERIAL THAT REACTS WITH AIR IN AN INERT ATMOSPHERE

Hendricus Elise Michel Cornelus Vos, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1969, Ser. No. 805,280
Claims priority, application Netherlands, Mar. 19, 1968, 6,803,906
Int. Cl. B22d *21/02, 27/16*
U.S. Cl. 164—63 **4 Claims**



Manufacturing a material having at least one metal component which reacts with air in an inert atmosphere comprising sucking said liquid into part of a tube, cooling said tube and liquid in the inert atmosphere to cause the material to solidify and expelling the molded solid material from said tube.

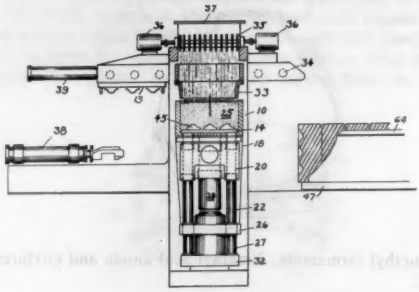
3,628,592

FLASKLESS SQUEEZE MOLDING MACHINE

Russell M. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., New York, N.Y.

Filed Dec. 16, 1968, Ser. No. 783,893
Int. Cl. B22c *17/08*
U.S. Cl. 164—183 **10 Claims**

This disclosure relates to molding machines. The molding machine forms a mold by squeezing a molding medium located in the molding chamber between the vertically spaced pattern plate which cover the upper and lower ends of the molding chamber. After mold formation the upper pattern plate is removed and the molding chamber together with the bottom pattern plate are tilted to a horizontal orientation. The mold is pushed out of the flask onto a pouring conveyor.

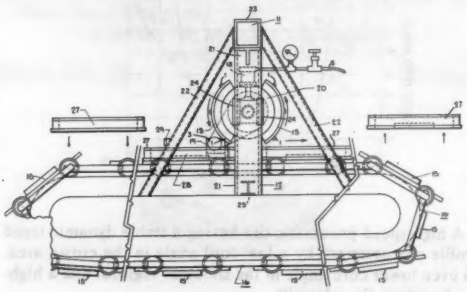


3,628,593

MOLD FORMING COMPACTOR WITH SELECTIVELY VARIABLE HYDRAULIC PRESSURE MEANS

John Staley, 281 Franklin Drive, Pittsburgh, Pa.

Filed May 6, 1970, Ser. No. 35,017
Int. Cl. B22c *15/08;* **B28b** *5/02*
U.S. Cl. 164—208 **6 Claims**



A mold-forming compactor for compressing and packing a molding material such as sand within a flask containing a pattern to a preselected mold hardness wherein a frame is provided to support a compactor roll and an endless loop conveyor which continually passes beneath the compactor roll provided on its periphery with spaced boss members for purposes of compaction. Means are provided to synchronize the timed correlation of the rotary velocity of the compacting roll and the lineal velocity of the conveyor so that these velocities are equal causing the loose mold-forming material deposited in the flask to be compacted by the engaging boss member therein around the pattern. Hydraulic means is provided to support the compacting roll as well as apply compacting pressure thereto to selectively vary the mold hardness of the molding material within the flask.

3,628,594

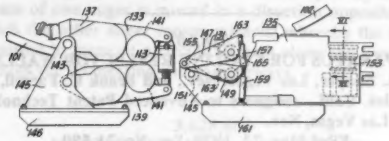
APPARATUS FOR REDUCING THE CROSS SECTION OF A CONTINUOUS CAST STRAND

Kurt Reinfeld, and Emmanuel V. Gouye, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed Jan. 13, 1969, Ser. No. 790,608
Int. Cl. B22d *11/12*
U.S. Cl. 164—270 **4 Claims**

Apparatus for reducing the cross section of a continuous cast strand includes pairs of powered rollers disposed in

horizontal planes, and pairs of powered rollers, disposed in vertical planes on opposite sides of the continuous cast strand. The strand passes between the roll pairs which are



moved together by fluid-actuated cylinder piston mechanisms to reduce the vertical and horizontal cross-sectional dimensions of the cast strand.

3,628,595

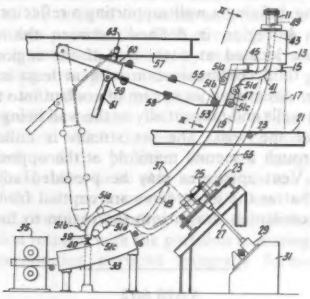
PIVOTALLY MOUNTED STARTER BAR IN A CONTINUOUS CASTING MACHINE

Hartman Mitchell, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Continuation-in-part of application Ser. No. 813,561, Apr. 4, 1969, now abandoned. This application Oct. 22, 1969, Ser. No. 868,353

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **14 Claims**



A short starter bar is pivotally connected to a radial arm that is power operated and is movable through an angle in a plane to bring the starter bar into cooperative relation with a continuous casting mold. A combination pinch and straightener roll assembly acts on the cast strand to withdraw it from the mold and to disconnect the strand from the starter bar.

3,628,596

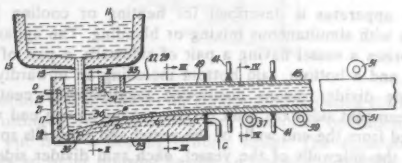
CONTOURED MOLD FOR HORIZONTAL CONTINUOUS CASTING

Rufus Easton, and Jose A. Botta, Jr., both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed Dec. 17, 1969, Ser. No. 885,823

Int. Cl. B22d *11/00*

U.S. Cl. 164—283 **10 Claims**



A horizontal mold for continuous casting has a contoured end and bottom, and contoured sides, but has no top. The bottom and sides are so shaped that, as the formed strand solidifies and is withdrawn from the mold, it emerges with a rectangular cross section.

3,628,597

EXTRACTION DEVICE FOR MACHINES FOR CASTING CONTINUOUS METAL INGOTS

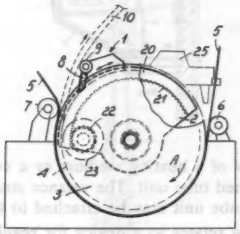
Ilario Properzi, Via V. Pisani 8, Milan, Italy

Filed Sept. 24, 1969, Ser. No. 860,759

Claims priority, application Italy, Oct. 4, 1968, 22096 A/68

Int. Cl. B22d *11/06*

U.S. Cl. 164—344 **1 Claim**



This disclosure relates to an extraction device for continuous ingot casting machines, comprising an extraction unit for separating the ingot from the casting wheel of a casting machine and partially straightening such ingot, said separation unit being mounted on a support mounted by the side of the casting wheel for rotation therewith, transmission means being provided to cause a partial rotation of said support when it is desired to adjust the position of said extraction unit.

3,628,598

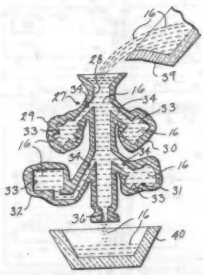
CASTING MOLDS

Samuel G. MacNeill, Milwaukee, and Henry L. Eickelberg, Watertown, both of Wis., assignors to Modern Equipment Company, Port Washington, Wis.

Filed Oct. 23, 1968, Ser. No. 769,971

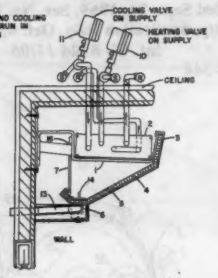
Int. Cl. B22c *9/20*

U.S. Cl. 164—350 **2 Claims**



A novel mold for making castings of metal or other molten material is provided with a vertical main sprue having gating or feeder lines radiating outwardly and extending downwardly at an angle from said main sprue to one or more mold cavities, the novel inclined arrangement of said feeder lines causing molten metal introduced into said mold cavities to be trapped therein and permitting the immediate evacuation of the metal from said main sprue after said cavities have been filled.

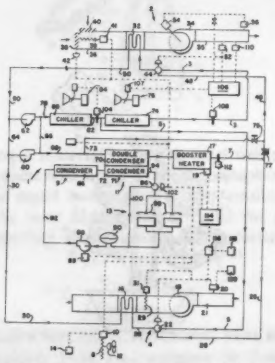
3,628,599
VALANCE HEATING AND COOLING DEVICE
Ray C. Edwards, 101 Alexandria Ave., Pompton Plains, N.J.
Filed Apr. 22, 1970, Ser. No. 30,676
Int. Cl. F24f 3/00
U.S. Cl. 165—22 **8 Claims**



trolling the flow of a heating medium or a cooling medium through the finned tube unit. The valance structure containing the finned tube unit may be attached to the ceiling or a

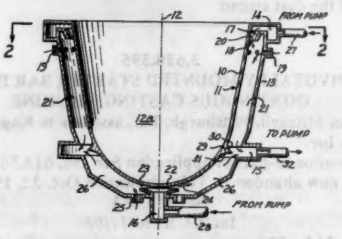
This invention relates to a device for regulating the temperature in an enclosure to a desired predetermined degree regulated by a manually set thermostat in the enclosure or room, and heats or cools the enclosure entirely by convection or a combination of convection and radiation, and further embodies a single valance unit embodying a finned tube structure including both heating medium conducting tubes and cooling medium tubes in a single unit, together with thermostatically controlled motorized valves for considewall near the ceiling of the enclosure and contains suitable flow directing means to direct cooled air downwardly along the wall, and heated air in horizontally flowing blankets across the ceiling of the enclosure.

3,628,600
AIR-CONDITIONING SYSTEM AND CONTROL INCLUDING CONTROL METHOD AND MEANS
Alden I. McFarlan, 691 Dorian Road, Westfield, N.J.
Filed Feb. 24, 1970, Ser. No. 14,738
Int. Cl. F24f 3/00
U.S. Cl. 165—22 **16 Claims**



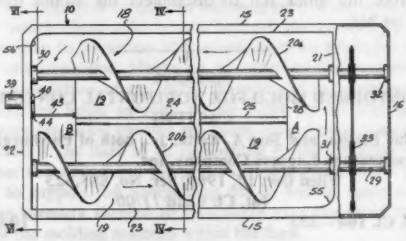
An air-conditioning system is disclosed for a building or buildings with a plurality of conditioned spaces or zones wherein there is a special control system which insures the proper heating and cooling of each of the conditioned spaces or zones with minimum equipment and energy consumption. Refrigeration units provide a constant supply of chilled water and a constant supply of hot water. Separate streams of the chilled and hot water are delivered to air coils through which air is supplied to the various conditioned spaces. The temperature of the water in the hot water line is used to determine whether there is an excess or deficiency of heat in the system, or if an exact balance has been achieved. The controls change the operation to achieve a proper heat balance.

3,628,601
APPARATUS FOR COOLING REFLECTOR WALLS
Alvin A. Snaper, Las Vegas, Nev., and Frank C. Farrell, Los Angeles, Calif., assignors to Advanced Patent Technology, Inc., Las Vegas, Nev.
Filed Mar. 23, 1970, Ser. No. 21,589
Int. Cl. F21v 29/00
U.S. Cl. 165—47 **7 Claims**



Apparatus in accordance with the present disclosure comprises housing defining a wall supporting a reflector also having a wall. A region is defined between the walls and manifolds are located at each end of the region. Nozzle means is in fluid communication with at least one of the manifolds for directing a jet stream of coolant into the region between the walls and tangentially to the wall being cooled to thereby cool the wall. The jet stream is collected and dispelled through a second manifold at the opposite end of the region. Vent apparatus may be provided adjacent the nozzles so that as the jet streams are emitted from the nozzles, air or coolant is drawn into the region to further cool the walls.

3,628,602
PROCESSING APPARATUS
Fred William Brunner, Eugene, Oreg., assignor to Manning's, Inc., San Francisco, Calif.
Filed July 13, 1970, Ser. No. 54,145
Int. Cl. F25b 29/00
U.S. Cl. 165—61 **7 Claims**



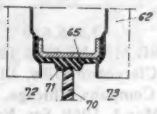
An apparatus is described for heating or cooling food mixes with simultaneous mixing or blending. The apparatus comprises a vessel having a pair of sidewalls, a pair of end walls and a bottom, said bottom including an upwardly extending divider means positioned longitudinally centrally between said sidewalls, said divider means having end walls spaced from the end walls of the vessel and sidewalls spaced from the sidewalls of the vessel, each said divider sidewall and the adjacent vessel sidewall merging into an arcuate bottom portion to form a pair of side-by-side trough portions within said vessel with connecting passages at the ends thereof, heat exchange means for heating or cooling the surfaces of the side-by-side trough portions in contact with the

material and a pair of material conveying augers disposed within said trough portions with the peripheries of the augers in close proximity with the trough portions, means for rotating said augers whereby material acted upon by the flight means of one auger is moved in a direction opposite to that which the other auger moves material whereby the material is caused to move in a circuitous path along the troughs and through the connecting end passageways.

3,628,603
MULTITUBULAR HEAT EXCHANGER

Walter Fieni, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Dec. 12, 1969, Ser. No. 884,581
Claims priority, application France, Dec. 13, 1968, 178074
Int. Cl. F28d *1/04*
U.S. Cl. 165—151 7 Claims

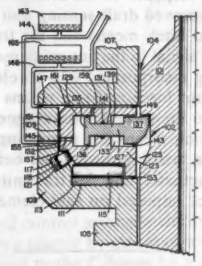


An automobile radiator of the type having a plurality of parallel water tubes with fins mounted thereon, header tanks disposed at the ends of the tubes and which in combination with the tubes provide the fluid circuit in the radiator. The tubes are maintained in place by means of securing plates and a sealing arrangement is provided by a gasket which cooperates with the securing plate to seal the tubes relative to the rest of the radiator. At least one of the header tanks has a partition which divides it into compartments. The header tank and the partition form an integrally molded plastic unit. In order to be able to maintain the seal tightness in each of the compartments of a header tank which includes a partition, a variety of sealing means are disclosed comprising a portion integral with the partition in mating relationship with corresponding portions integrally formed with the gasket.

3,628,604
METHOD AND APPARATUS FOR CEMENTING OFFSHORE WELLS

Mark A. Childers, and George H. Bruce, both of Houston, Tex., assignors to Esso Production Research Company

Filed Nov. 26, 1969, Ser. No. 880,032
Int. Cl. F21b *33/035*
U.S. Cl. 166—.5 7 Claims

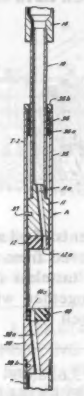


Method and apparatus for supporting the casing string and permitting its rotation during well cementing operations carried out from a floating drilling vessel. The apparatus includes an outer housing having an opening extending vertically through it which is normally mounted atop the subsea wellhead assembly. An inner member is supported within the outer housing and is rotatable with respect to it. This inner member has a central bore coaxial with the opening in the housing. At least one hydraulically extensible member is connected to the inner member and serves to anchor a casing string extending through the bore to the inner member. Remotely actuated means are also provided for introducing hydraulic fluid into the inner member to extend or retract each of the extensible members.

3,628,605
SAFETY APPARATUS FOR PETROLEUM WELLS

Maurice Kirkpatrick, 4734 Briarbend, and Donnell E. Waggener, 5035 Yarwell, both of Houston, Tex.

Filed June 1, 1970, Ser. No. 41,788
Int. Cl. E21b *33/00*
U.S. Cl. 166—226 8 Claims

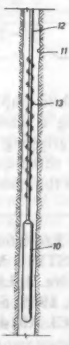


Safety apparatus for petroleum wells, particularly wells located offshore, wherein the apparatus has means for quickly and positively closing off fluid flow from the well in the event of a well fire, blowout or similar dangerous well condition.

3,628,606
APPARATUS FOR DAMPENING ERRATIC VERTICAL MOVEMENTS OF WELL TOOLS

Jean Louis Bernard, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

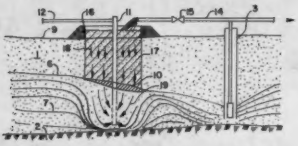
Filed Mar. 26, 1970, Ser. No. 22,931
Int. Cl. E21b *17/10*
U.S. Cl. 166—241 10 Claims



In the preferred embodiment of the present invention disclosed herein, a well tool is dependently coupled to a suspension cable having a large number of relatively stiff, but flexible, laterally projecting members distributed along the lower portion of the cable and adapted to occupy a substantial portion of the annular space between this lower cable portion and the surrounding walls of a well bore. In this manner, as

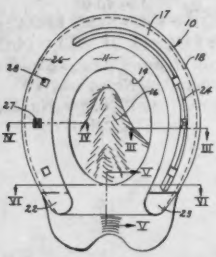
the well tool is being moved upwardly through a fluid-filled well bore, these outwardly projecting members will induce a viscous drag which will be effective to at least dampen vertical oscillatory movements of the tool and cable that will otherwise be induced by unpredictable differences in the frictional drag of the tool and cable along the well bore wall.

3,628,607
OIL SPILL REMOVAL METHOD
Daniel N. Dietz, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed May 7, 1970, Ser. No. 35,449
Claims priority, application Great Britain, May 12, 1969, 24026/69
Int. Cl. E21b *43/16*
U.S. Cl. 166—305 R **3 Claims**



Taste-spoiling components of oil spilled in a drinking water catchment area are removed from the aquifer by supplying liquid such as water or tasteless oil to the spill area and recovering the liquid together with the undesired components via an auxiliary well.

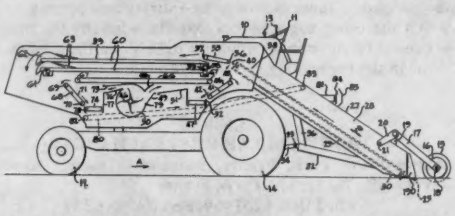
3,628,608
RESILIENTLY FLEXIBLE HORSESHOE
Harvey George Sherman, Kalamazoo, Mich., assignor to Flex-Step, Inc., Kalamazoo, Mich.
Continuation-in-part of application Ser. No. 752,343, Aug. 13, 1968, now Patent No. 3,513,915. This application Jan. 28, 1970, Ser. No. 6,538
Int. Cl. A01l *5/00*
U.S. Cl. 168—4 **8 Claims**



An elastomeric horseshoe impregnated with small metal fragments and comprising a sheet means having a central opening and an arcuate gripping member integral with and extending approximately three-quarters of the way around said sheet means adjacent the outer edge thereof.

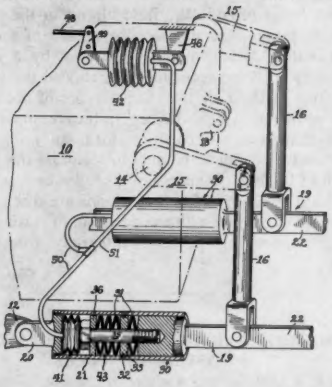
3,628,609
HARVESTING MACHINE
Wilbur H. Graybill, R.D. No. 2, Lititz, Pa.
Filed Aug. 11, 1969, Ser. No. 848,993
Int. Cl. A01d *17/22*
U.S. Cl. 171—14 **9 Claims**

A tomato-harvesting machine for severing tomato-bearing stalks with reciprocating cutter bars, elevating the stalks and tomatoes with an inclined conveyor, and separating the tomatoes and the stalks with shaker bars, inclined cleaning belts, and a debris-removing fan. A first of the cleaning belts is positioned between the conveyor and the shaker bears to receive tomatoes previously separated from the stalks and reject soil early in the harvesting process. The second of the cleaning belts is located at an end of the shaker bars remote from the inclined conveyor to receive tomatoes subsequently



separated from the stalks by the shaker bars. A transfer belt bridges the gap between the inclined conveyor and the shaker bars above the first cleaning belt to prevent entanglement of any vegetation in the shaker bar mechanism.

3,628,610
DRAFT-SENSING MEANS FOR TRACTOR HITCHES
James Morkoski, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed May 1, 1969, Ser. No. 820,752
Int. Cl. A01b *63/32*
U.S. Cl. 172—9 **11 Claims**

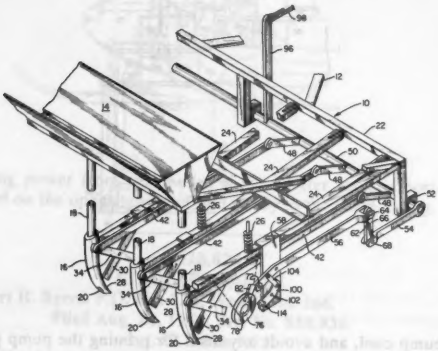


For employment with a tractor having a hitch means, a power lift unit for vertically raising and lowering the hitch means on said tractor, actuating means for controlling the power lift unit in response to the draft load of an associated implement, an improved draft-sensing unit for measuring the draft load on said hitch means and for transferring a quantitative draft load signal to the actuating means, the improved sensing unit being incorporated into an element of the hitch and having resilient force-resisting means which will deflect proportionately to the force imposed upon said element and hydraulic measuring means for measuring the deflection of the resilient force resisting means and being interconnected with the power actuator unit for transmitting a quantitative signal of the force imposed on said element to the actuator unit.

3,628,611
TRASH-CLEARING APPARATUS
Gaynor Carlson, R.F.D. No. 1, Herndon, Kans.
Filed June 9, 1969, Ser. No. 831,363
Int. Cl. A01b *33/16*, *19/10*
U.S. Cl. 172—39 **9 Claims**

When a grain drill moves across a field in a sowing operation the row of drill stems gathers stalks, stubble, and weeds

which become aligned laterally and drag dirt along, either raising the drill stems from the ground or creating too much drag for the tractor. The invention comprises a series of shears, usually one for each drill stem, operating in a vertical fore and aft plane to chop the laterally extending trash elements into short pieces which then pass between the drill stems and do not pile up or drag dirt. The shears are operated by linkages actuated by rotation of the ground wheels. Linkages may be disconnected for travel over roads or clean fields to reduce wear.



3,628,612

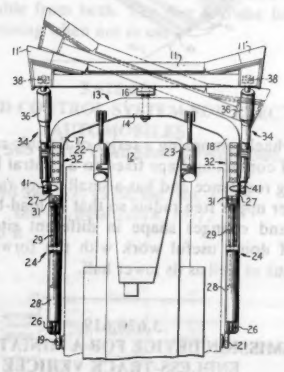
MOUNTING ARRANGEMENT FOR BULLDOZER BLADES

Richard K. Liess, Peoria; Donald E. Ribbing, Joliet; Visvaldis A. Stepe, Willow Springs, and Eugene M. Wilson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 8, 1969, Ser. No. 855,908

Int. Cl. E02f *3/76*

U.S. Cl. 172—804 **8 Claims**



A mounting and control arrangement for supporting a bulldozer blade upon a tractor by means of a C-frame. The blade is centrally secured to the C-frame by a universal ball joint. Hydraulic angling jacks are interconnected between each leg of the C-frame and a guide member slidably mounted on a T-shaped bar respectively secured to each C-frame leg. A triangular brace supports each end of the blade and is secured to the respective guide members by a ball joint. The angling jacks are pivotally connected to the C-frame legs and the guide members by means of ball joints to reduce stresses with the pivotal connection between the angling jacks and the guide members preferably being a trunnion mounting having a pivot axis perpendicularly related to the axis of the pivot joint between each angling jack and the C-frame.

3,628,613

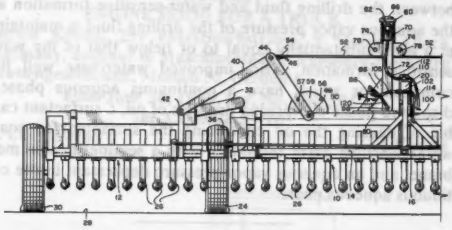
AGRICULTURAL IMPLEMENT END FRAMES LIFT MEANS

Edward J. Kaufman, North 81, R.R. 1, Newton, Kans.

Filed Aug. 18, 1969, Ser. No. 850,832

Int. Cl. A01b *65/02*

U.S. Cl. 172—311 **11 Claims**



A hydraulic cylinder mounted on the central frame of an agricultural implement connects by sheave and pulley means to end frames to pivotally raise and lower the same.

3,628,614

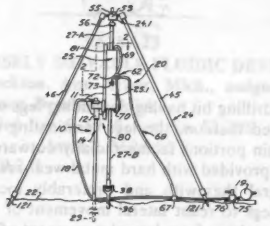
DRILL-SUPPORTING APPARATUS

Francis J. Brennan, and Karl H. Christensen, both of Vananda Post Office, Vananda, British Columbia, Canada

Continuation of application Ser. No. 813,134, Apr. 3, 1969, now abandoned. This application Mar. 23, 1970, Ser. No. 21,985

Int. Cl. E21c *5/11*

U.S. Cl. 173—29 **17 Claims**



Adapted for use drilling steep or horizontal rock faces. A hydraulic cylinder assembly with upper and lower piston rods extending through upper and lower cylinder heads, the piston rods being secured in a piston. A lower end of the lower piston rod is anchored through universal joint to a rock face being drilled, the upper end of the piston rod being secured at an apex of a tripod. The drill is attached to the cylinder with a longitudinal axis of the drill parallel to a longitudinal axis of the cylinder assembly. Provision for admitting water under pressure to an upper cylinder space with a lower cylinder space being connected to a bleeder pipe having a bleeder valve. With the bleeder valve opened a small amount, the drill is fed downwards against the face at a rate which is a function of the amount by which the bleeder valve is opened. The cylinder is moved upwards with respect to the piston rods by similarly introducing water under pressure to an upper cylinder space, so that the hydraulic cylinder also provides means of pulling a drill rod from the hole. Water supply from source used to lubricate and cool the drill.

3,628,615

WATER-BASE WELL FLUIDS FOR SHALE STABILITY AND USE THEREOF

Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company

Continuation of application Ser. No. 702,635, Feb. 2, 1968, now abandoned. This application Jan. 26, 1970, Ser. No. 5,826

Int. Cl. E21b *21/04, 43/25*; G01n *7/10*

U.S. Cl. 175—65 41 Claims

A method for drilling a borehole through a water-sensitive earth formation with a drilling fluid having a water continuous phase wherein a semipermeable membrane is interposed between the drilling fluid and water-sensitive formation and the aqueous vapor pressure of the drilling fluid is maintained at a level substantially equal to or below that of the water-sensitive formation. Also, improved water-base well fluid compositions which have a continuous aqueous phase, a dispersed phase comprising droplets of oil, a surfactant capable of causing the oil containing the surfactant to coat a water-sensitive earth formation with a semipermeable membrane, and an aqueous vapor pressure depressant in the continuous aqueous phase.

3,628,616

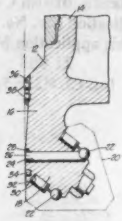
DRILLING BIT WITH INTEGRAL STABILIZER

William J. Neilson, Whittier, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Dec. 18, 1969, Ser. No. 886,281

Int. Cl. E21b *9/10*

U.S. Cl. 175—375 4 Claims



A rotary drilling bit having depending legs with rotary cutters journaled thereon, the legs terminating downwardly in relatively thin portions facing radially outwardly and the bit body being provided with hard metal wear-resisting stabilizer shoes integral therewith and preferably located vertically above the legs to resist lateral movement of the tool in the formation resulting from lateral movement of the drill string above the tool and thereby reduce wear of the tool legs, and especially their lower portions.

3,628,617

LIQUID RECIRCULATING AND WEIGHING SYSTEM

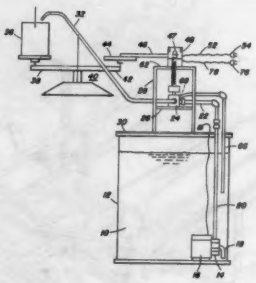
Richard V. Ferrigan, Albany, N.Y., assignor to G A F Corporation, New York, N.Y.

Filed Apr. 3, 1970, Ser. No. 25,396

Int. Cl. G01g *13/16, 13/26, 13/32*

U.S. Cl. 177—116 3 Claims

Liquid dye is pumped by a pump submerged therein from a supply tank through a feed pipeline and into a portable bucket set on one side of a beam balance scale, until a preselected weight of such liquid in the bucket balances the scale, whereupon the other side initiates an electrical signal and operates a relay which energizes a control circuit, activating a solenoid which, in turn, operates valve means in such feed pipeline to switch the entire flow of liquid from the bucket, back to the tank through a liquid return pipe, thereby recirculating such liquid as long as the pump is running, which agitates the liquid dye in the tank, keeps the pump cool, and avoids any need for priming the pump prior to each weighing operation.



3,628,618

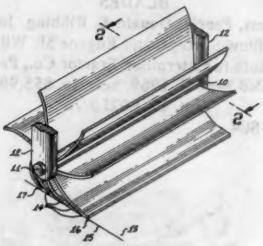
FLAP WHEEL

Thomas P. Cash, 158 Glenmar Road, Mesa, Ariz.

Filed Dec. 4, 1969, Ser. No. 882,008

Int. Cl. B62d *57/00*

U.S. Cl. 180—7 4 Claims



A flap wheel comprising a series of flexible radially extending ground contacting flaps fixed to a central hub to provide low turning resistance and has a small lower radius to ground and a larger upper free radius so that its load-bearing surface is larger and changes shape in different situations and is capable of doing useful work with the forward half of its upper radius as well as its lower half.

3,628,619

TRANSMISSION DEVICE FOR A MINIATURE SNOW ENDLESS-TRACK VEHICLE

Kenzo Tanaka, Hamamatsu-shi, and Fujihiko Tomita, Iwatagun, Shizuoka-ken, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Dec. 1, 1969, Ser. No. 881,263

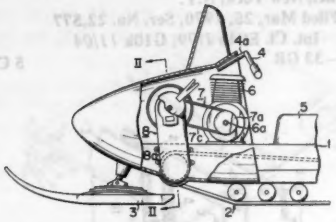
Claims priority, application Japan, Dec. 2, 1968, 43/104348

Int. Cl. B62d *55/00*; F16h *47/00, 37/00*

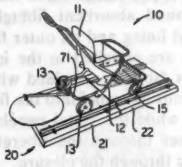
U.S. Cl. 180—9.64 11 Claims

A transmission device involves a belt-driven pulley for receiving engine power. Said pulley is disposed close to a chain casing for covering a transmission chain-drive, and rotatably mounted on a hollow cylindrical shaft which extends from the side wall of said chain casing and through

which extends a driving shaft fitted with the sprocket wheel of said chain-drive. A hydraulic torque converter for transmitting power from said pulley to said latter shaft is positioned on the opposite side of said pulley to the chain casing.

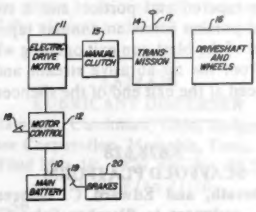


3,628,620
STROLLER MOVER
Robert H. Byers, P.O. Box 124, West Point, Ind.
Filed Aug. 18, 1969, Ser. No. 850,936
Int. Cl. B62b *9/22*
U.S. Cl. 180—1 D **2 Claims**



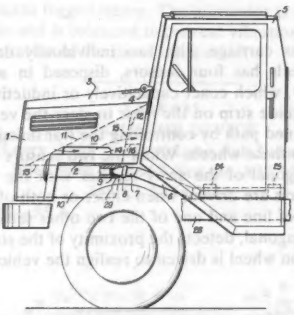
A portable baby rocking device for use in combination with a stroller to move the stroller back and forth. The stroller is placed on the outside flat surface of a portable housing which has adjustable tracks for guiding the wheels of the stroller. A gear-reduction-type motor is mounted on the housing and has a removable disc secured thereto. A link extends between and connects the disc and a stroller and is readily detachable from both. The disc and the link can be stored in the housing when not in use.

3,628,621
DRIVE AND CONTROL SYSTEM FOR ELECTRIC AUTOMOBILES
William H. Lee, 505 North Lake Shore Drive 01306, Chicago, Ill.
Filed Jan. 12, 1970, Ser. No. 2,124
Int. Cl. B60l *11/18, 15/12*
U.S. Cl. 180—65 R **9 Claims**



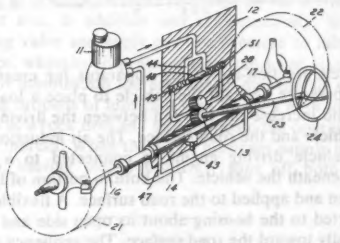
A drive and control system for electrically powered automobiles. Controlled rectifiers are connected between a battery and the armature circuit of a compound motor to supply increasing amounts of current to the armature for acceleration. Transistors are connected between battery and shunt field to control current thereto. An accelerator pedal connected to a carbon pile resistor controls the conduction of the transistors. Relays connect the battery directly to the shunt field for starting, and control the sequence in which increasing amounts of current are supplied to the armature. A charging circuit permits charging of the main battery from a conventional AC source. A switch is provided to allow connection of the motor as a generator for charging the battery when the vehicle is towed or pushed. Motors and associated switches and relays may be provided to control and operate an automatic clutch in conjunction with the drive and control system.

3,628,622
ENGINE HOOD FOR A TRUCK
Heinrich Kiwitz, 239 Eversbuschstrasse, 8 Munich-Allach, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich 50, Germany
Filed June 30, 1969, Ser. No. 837,584
Int. Cl. B62d *25/10*
U.S. Cl. 180—69 C **8 Claims**



The engine hood and front fenders are formed in a single piece which is hinged to the cab beneath the windshield. The bottom of the hood is elastically engaged with the front end of the cab frame.

3,628,623
REVERSELY DRIVABLE FLUIDIC DEVICE
Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 6, 1970, Ser. No. 52,308
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 R **2 Claims**



A reversely drivable double gear fluid motor adaptable for use in a vehicle power steering system in which linear displacement of one of the gears in a direction perpendicular to its axis of rotation within the gear chamber determines the direction of rotation of the motor.

3,628,624

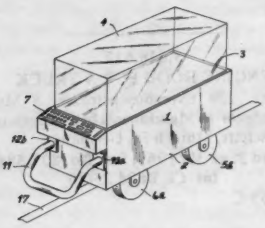
GUIDANCE SYSTEM FOR SELF-PROPELLED TRACKLESS CARRIAGES

Erich Wesener, Munich-Laim, Germany, assignor to Buro Patent AG, Glarus, Switzerland

Continuation-in-part of application Ser. No. 633,871, Apr. 26, 1967, now Patent No. 3,474,877. This application Sept. 24, 1969, Ser. No. 860,566

Int. Cl. B62d 1/24

U.S. Cl. 180—98 12 Claims



A trackless carriage with two individually drive lateral traction wheels has four sensors, disposed in a diamond-shaped array, which coact capacitively or inductively with a continuous guide strip on the floor to steer the vehicle along a predetermined path by controlling the transmission of driving torque to these wheels. When the two sensors on the longitudinal diagonal of the array register with the strip, both traction wheels are driven; when either or both of these sensors are out of line and one of the two other sensors, on the transverse diagonal, detects the proximity of the strip, the opposite traction wheel is driven to realign the vehicle with the guide path.

3,628,625

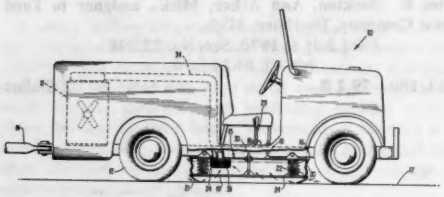
VEHICLE TRACTION-INCREASING APPARATUS

Richard Q. Boyles, Jr., 4956 Carol Lane, Atlanta, Ga.

Filed June 20, 1969, Ser. No. 834,991

Int. Cl. B60b 39/00

U.S. Cl. 180—115 2 Claims



A vehicle traction-increasing apparatus for creating sub-ambient pressure beneath the vehicle to place a load on the vehicle and increase the traction between the driving wheels of the vehicle and the road surface. The air induction system of the vehicle driving engine is connected to a housing located beneath the vehicle. The bottom portion of the housing is open and applied to the road surface. A flexible curtain is connected to the housing about its open side and is urged downwardly toward the road surface. The resiliency and configuration of the curtain is sufficient to allow only a small opening between the road surface and bottom edge of the curtain so that a significant pressure reduction must be created to flex the curtain, yet once the curtain is flexed away from the road surface, it forms a virtually friction-free bearing with the road surface and is movable across the road surface without appreciable drag.

3,628,626

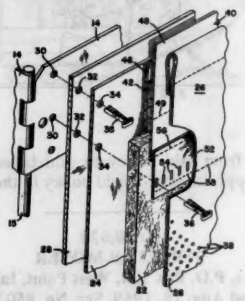
QUIET WALL

Bennett W. Merrill, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,577

Int. Cl. E04b 1/99; G10k 11/04

U.S. Cl. 181—33 GB 5 Claims



A folding partition consisting of a pair of acoustical assemblies or sides which combine the acoustical properties of sound absorption and sound transmission loss, and include a flexible blanket of sound absorbent fiberglass sandwiched between an inner vinyl lining and an outer fabric and a plurality of metal panels are attached to the inner side of the vinyl lining. The outer fabric is provided with a multiplicity of perforations for admitting sound into the fiberglass blanket where it is absorbed, while the metal panels further reduce the sound which passes through the fiberglass and further prevent it from passing through the closure.

3,628,627

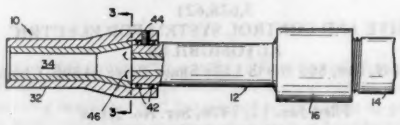
SILENCER FOR AIR-BLASTING GUN

Ted A. Arnold, Palo Alto, Calif., assignor to Vacu-Blast Corporation, Belmont, Calif.

Filed Oct. 2, 1970, Ser. No. 77,444

Int. Cl. B24c 3/00; F01n 1/08, 7/08

U.S. Cl. 181—36 R 4 Claims



A silencer adapted to be attached to an abrasive blasting gun comprises a tapered end portion and a straight barrel portion. The end portion forms an annular tapered airspace around the outlet of the blast-gun exit opening which helps to absorb energy from the air-abrasive stream and suppresses the sound produced at the exit end of the silencer.

3,628,628

SCAFFOLD PLATFORM

William E. Gilbreath, and Edward C. Gilbreath, both of Houston, Tex., assignors to Bleacher Sales Co., Houston, Tex.

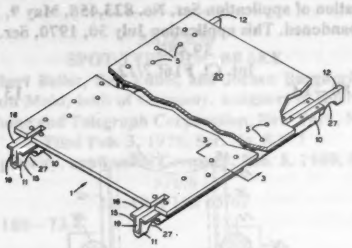
Filed Apr. 6, 1970, Ser. No. 25,735

Int. Cl. E04g 5/08

U.S. Cl. 182—222 4 Claims

A scaffold platform comprising a pair of joist supporting and secured to a deck plate, with their ends so fabricated

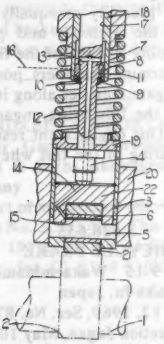
that they can be disposed on a scaffold to furnish an elongated horizontal platform for the support of building materials and workmen, and for use as a walkway.



3,628,629
TAPPET ASSEMBLY LUBRICATING MEANS

Ronald Phillips, Northalt, Middlesex, England, assignor to Simms Group Research & Development Limited, London, England

Filed Feb. 5, 1970, Ser. No. 8,994
Claims priority, application Great Britain, Feb. 17, 1969, 8,436/69
Int. Cl. F16n *13/14*
U.S. Cl. 184—6.17 **2 Claims**



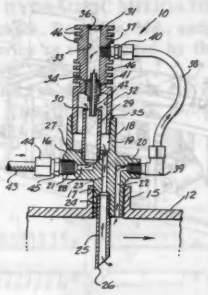
A reciprocating mechanism includes a roller which cooperates with a cam to effect reciprocation of a plunger. The roller is mounted on a pin and for the purpose of lubrication, the plunger is provided with a piston which is moved in a cylinder during reciprocation of the plunger. The cylinder is connected by a passage to the bearing defined between the pin and the roller and oil is forced along the passage by the piston to lubricate the bearing, during inward movement of the plunger under the action of the cam.

3,628,630
LUBRICANT DISPERSER

William C. Hammer, Cincinnati, Ohio, assignor to Sharvania Oil & Grease Corporation, Memphis, Tenn.

Filed May 19, 1970, Ser. No. 38,738
Int. Cl. F16n *11/10*
U.S. Cl. 184—50 **7 Claims**

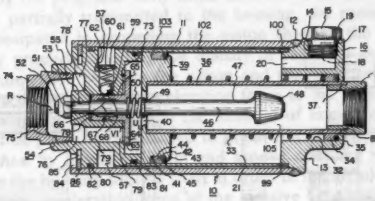
A lubricator for supplying lubricant to the steam main leading to steam operated equipment such as a drop forge hammer, a steam engine, pumps, steam driven air compressors, valves, and any other steam driven equipment best lubricated by having a lubricant atomized or fogged into the steams supply. The lubricator includes a mixing cup into which lubricant is fed and into which condensed steam is introduced. Vacuum from the main is then used to create ebullition causing the lubricant water mixture to overflow the cup and to be drawn into the steam main to mix with the steam to form lubricant fogged steam. The lubricator is mounted on a steam main and is balanced to prevent vibration damage during the operation of the steam equipment.



3,628,631
LUBRICATOR DEVICE

Paul C. O'Leary, 2668 Stanford Lane, Salt Lake City, Utah

Filed June 27, 1969, Ser. No. 837,133
Int. Cl. F16n *7/34*
U.S. Cl. 184—55 A **11 Claims**



An on-stream lubricator device for interposition between an air-driven tool and an air supply of practically any given pressure above one atmosphere. The lubricator device is constructed to receive and contain lubricating fluid, such as oil, which is maintained under pressure only during operation of the air-driven equipment. Input air pressure is effective, when selectively applied in accordance with the selective operation of the air tool used, to open an air valve in the device so as to supply a rapid stream of air for driving the air tool used and, in addition and simultaneously, to open a lubricating valve and apply positive pressure to lubricant in the device, whereby to pressure-eject lubricant into such air stream for atomization therein, this so that the air stream so entraining droplets of lubricant may be used both to power a tool such as a rock drill and also lubricate the operating moving parts thereof. When the tool's lubricant supply is nearing depletion, valving means positively shut off both air and lubricant.

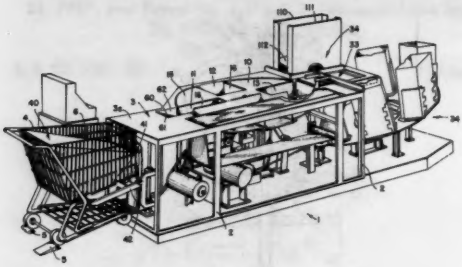
3,628,632
AUTOMATIC CHECKOUT COUNTER

Frank Lambert, Bay St., Box 85, Osterville, Mass.

Filed Aug. 12, 1969, Ser. No. 849,311
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 A **10 Claims**

An automatic checkout system for supermarkets and the like in which shopping carts are sequentially and automati-

cally unloaded by an elevator mechanism. The articles in the cart are placed on a carousel-style conveyor by the operator and are moved by the carousel to a bag-loading station having means for automatically supplying open bags to receive the articles which are fed automatically from the carousel to the bag. Means are provided for conveying the bags to a storage or pickup area.



3,628,633

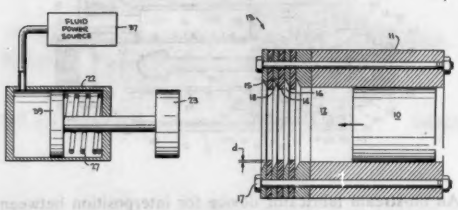
LINEAR AND ANGULAR VELOCITY BRAKE

Albert D. Meeks, McLean, Va., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 25, 1970, Ser. No. 14,149

Int. Cl. F16f 7/12

U.S. Cl. 188—1 C **10 Claims**



A unidirectional braking device comprising a pliable member which is located partially in the path of a moving object for providing the retarding force to the object and a support member to substantially prevent the pliable member from yielding in the forward direction and to permit substantial yielding of the pliable member in the reverse direction. The pliable member comprises a material which is yieldable under the force created by the transmission of the object and braking is accomplished by means of friction between the pliable member and the object. In order to achieve directionality of braking, a nonyielding support member is located to the forward side of the pliable member and is coextensive with the pliable member but recessed from the path of the object. A more gradual braking effect can be achieved with the use of a plurality of pliable members spaced apart by support members, the entire unit being rigidly held together. Each of the support members are coextensive with the pliable members at the forward side of each of the pliable members. A space is provided at the reverse side between each of the support members and the pliable members to permit the pliable members to yield in the reverse direction. This space comprises a recess located at each of the support members. Angular and linear retarding forces to spinning cylindrical projectiles may be achieved by the use of a cylindrical brake.

3,628,634

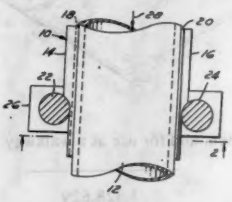
FINNED ENERGY ABSORBER

Jonas Valukonis, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of application Ser. No. 823,458, May 9, 1969, now abandoned. This application July 30, 1970, Ser. No. 59,485

Int. Cl. F16f 7/12

U.S. Cl. 188—1 C **13 Claims**



A finned energy absorbing device includes a stationary member, a movable member, a deformable fin secured to one of the members and a fin-deforming member secured to the other of the members. The deformable fin and the fin-deforming member are so dimensioned with respect to one another that when they are secured to their associated members, the fin-deforming member interferes with the passage of the fin therepast when the movable member is moved with respect to the stationary member. In one embodiment, the finned energy-absorbing device includes an elongate cylindrical member having a plurality of equally spaced fins lying along the length of the member and projecting radially therefrom. Corresponding to each of the fins is one of a plurality of arcuate deforming members positioned such that movement of the elongate member along its longitudinal axis will result in each of the fins being engaged by one of the deforming members. This engagement results in a combination bending and shearing of the fins whereby energy is absorbed.

3,628,635

BICYCLE BRAKE

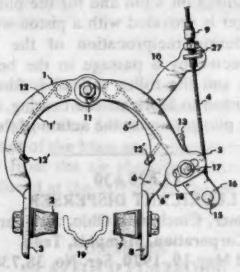
Kiyokazu Yoshigai, 9-15 Wakaeminami-machi 1-chome, Higashiosaki-shi, Osaka-fu, Japan

Filed Nov. 12, 1969, Ser. No. 875,699

Claims priority, application Japan, May 10, 1969, 44/42885

Int. Cl. B62l 1/12

U.S. Cl. 188—26 **4 Claims**



The present invention relates to a side-pull bicycle brake mechanism having major and minor arch members wherein it is required to pull upwards on one end of said major arch member by means of a wire in the case a pair of brake shoes are one-sided from the center, and so constructed that a small tensile force can achieve a big brake effect with easy handling by providing simple force magnifying means

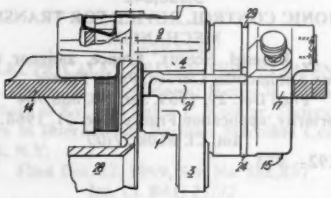
between the pulling member of said major arch member and said wire, so that said pair of brake shoes can be always actuated and applied equally to the two sides of bicycle rim.

3,628,636

SPOT-TYPE DISC BRAKE

Hans Albert Beller, Bad Vilbel, and Jochen Burgdorf, Offenbach am Main, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,177
Claims priority, application Germany, Feb. 5, 1969, P 19 05 576.6
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.4 1 Claim



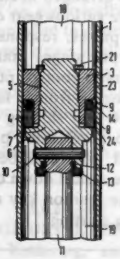
This spot-type disc brake for vehicles has a fixed carrier extended over a brake disc and brake shoes slidably mounted on the carrier. A slidable frame having sides which engage slots in the carrier transmits the actuating force from an actuating cylinder and brake shoe on one side of the disc to the brake shoe on the other side of the disc.

3,628,637

EXTENDABLE SUPPORT COLUMN

Ludwig Axthammer, Garmisch-Partenkirchen, Germany, assignor to Fichtel & Sachs Aktiengesellschaft, Schweinfurt am Main, Germany

Continuation-in-part of application Ser. No. 707,846, Feb. 23, 1968, now Patent No. 3,503,472. This application Feb. 17, 1970, Ser. No. 11,946
Int. Cl. F16d *63/00*
U.S. Cl. 188—300 9 Claims



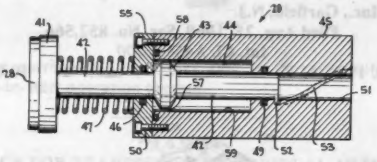
A hydropneumatic support column for a table top or the like has a cylinder, a two-part piston in the cylinder and a piston rod extending outwardly of the cylinder. Respective axial faces of the two piston parts conformingly engage axially spaced portions of the inner cylinder wall, and spacedly opposite radial walls of the piston parts bound a receptacle for an O-ring dimensioned to define a gap with the inner cylinder wall in the relaxed position. The inner end of the piston rod threadedly engages one piston part and abuttingly engages the other so that the resilient O-ring may be axially compressed between the radial walls of the piston parts by turning the external portion of the piston rod until it closes the gap, thereby breaking communication between two axial grooves in the piston parts which jointly connect the two compartments on opposite sides of the piston when the gap is open.

3,628,638

HYDRAULIC MITIGATOR

Herbert D. Curchack, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 2, 1970, Ser. No. 7,928
Int. Cl. F16f *9/32, 13/00*
U.S. Cl. 188—312 6 Claims



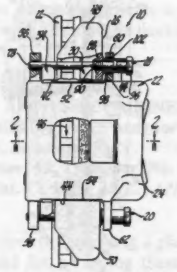
A hydraulic mitigator comprises a relatively massive hollow housing having two coaxial bores, the second bore being larger than the first. A shaft partially extending outside the housing rides in the first bore while a piston which is connected to the shaft rides exclusively within the second bore. The larger bore is filled with a fluid of a known density and a space is provided between the bore and the outer rim of the piston to enable the piston to be propelled through the fluid. The portion of the shaft which extends outside the housing is provided with an enlarged plate which is intended to be struck by the projectile. Any force directed at the plate will be only partially transmitted to the housing, the remainder being dissipated in propelling the piston through the fluid. Thus by properly selecting the density of the fluid and the size of the space between the piston and the bore, one can impose a predetermined deceleration force to the projectile. If the mitigator is spinning at the moment of impact such a spin can be partially transmitted to the projectile. This is accomplished by providing a pin and groove coupling means between the housing and the shaft in order to impart some of the angular acceleration force of the massive housing to the relatively lightweight shaft.

3,628,639

DISC BRAKE CALIPER-MOUNTING MEANS

Frank R. L. Daley, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1967, Ser. No. 664,673
Int. Cl. F16d *55/224*
U.S. Cl. 188—73.3 4 Claims



A disc brake assembly having a caliper mounting and guide arrangement in which the caliper moves axially of the disc when the brake is actuated so as to bring brake shoes con-

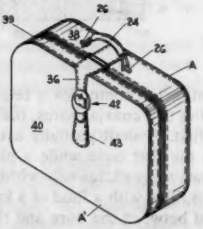
tained within the caliper into frictional engagement with both sides of the disc. The caliper is mounted and guided on pin or bolt assemblies connected to a support bracket so that the caliper is slidable in axial directions relative to the disc and is resiliently cushioned against rattles. The support bracket takes torque reaction directly from the caliper. Once the caliper is installed as a part of a complete disc brake assembly and the vehicle wheel is in place, the caliper is effectively caged by the disc, the wheel, and the support bracket.

3,628,640

LUGGAGE WITH SLIDE FASTENER CLOSURE AND SLIDER THEREFOR

Richard Molnar, East Paterson, N.J., assignor to Presto Lock Co., Inc., Garfield, N.J.

Filed Aug. 25, 1969, Ser. No. 852,566
Int. Cl. A45c *13/00*
U.S. Cl. 190—41 Z **10 Claims**



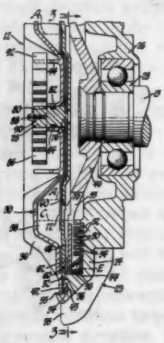
A luggage case comprising opposed case sections of a sewable material employs a slide fastener for opening and closing the case. A strap is connected to one case section and means connected to the opposite case section is provided for releaseably locking the strap. The strap overlies a slider or sliders in the closed condition of the slide fastener. The slider, or where a pair of sliders are used to open and close the fastener, are each provided with an elongated loop member through which the strap is extended to prevent the slide fastener from being opened, unless the strap is disconnected from the means for locking the strap to the case.

3,628,641

VISCOUS FLUID CLUTCH

John N. Snodgrass, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1970, Ser. No. 32,265
Int. Cl. F16d *35/00*
U.S. Cl. 192—58 B **10 Claims**



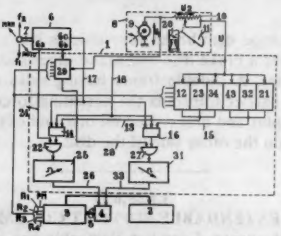
A viscous fluid clutch including relatively rotatable first and second drive members having a fluid shear space therebetween and which are cooperable with a fluid medium in the shear space to provide a shear-type fluid drive therebetween, an annular reservoir for at times storing the fluid medium, a temperature-responsive valve for controlling the flow of the fluid medium from the annular reservoir through an inlet port to the fluid shear space, continually open outlet ports and cooperating pump elements or wipers for forcing the fluid medium from the fluid shear space to the reservoir, and an annular cushion member mounted on one of the drive members, radially outwardly of the oppositely disposed ridge and groove shear space elements, between either radially extending or parallel tapered thrust faces of the clutch and housing members for improving the bearing characteristics and/or cushioning the impact therebetween under "wobble" conditions.

3,628,642

ELECTRONIC CONTROL DEVICE FOR TRANSMISSION MECHANISM

Raymond A. Ravenel, Sceaux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Dec. 29, 1969, Ser. No. 888,764
Claims priority, application France, Dec. 31, 1968, 182,909
Int. Cl. B60k *21/00*
U.S. Cl. 192—.073 **21 Claims**



An automatic device for controlling a stepped-gear transmission mechanism of an automotive vehicle comprising a group of $n-1$ circuits in parallel for changing up to a higher gear and a group of $n-1$ circuits in parallel for changing down to a lower gear (n being the number of forward speeds provided by the transmission mechanism or gearbox), these various circuits comprising level detector stages of which the switching thresholds are arranged in stepped relation to each other as a function of the various gear changes, and a generator of manual control pulses, responsive to a selector, for transmitting to the output stages manual-control pulses in parallel with the automatic-control pulses delivered by the various circuits for changing from a lower gear to an upper gear and vice versa. The gear shifting circuits are controlled by means responsive to accelerator position and a vehicle-driven tachometer, and may also be controlled by brake pedal operation to cause a shift down during vehicle braking. Means controlled by the ignition key cause the transmission to shift to neutral during starting.

3,628,643

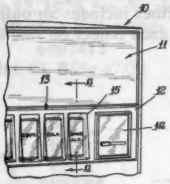
SELECTOR MECHANISM FOR COIN-CONTROLLED ARTICLE DISPENSERS

Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Nov. 7, 1969, Ser. No. 874,915
Int. Cl. G07f *11/00*
U.S. Cl. 194—10 **9 Claims**

Selector mechanism for automatic coin-operated vending machines incorporating item display means and an actuator for operating electrical switch means for activating the selector mechanism; the latter including an item display platform and being operationally conditioned by electromechanical in-

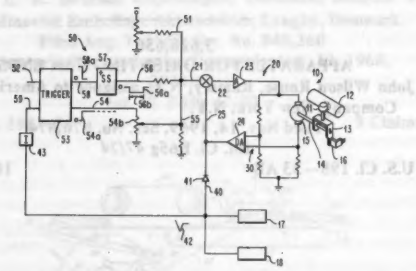
terlock means responsive to the availability of items for vending and which activates a mechanical signal system for positively informing the customer of item availability for selection.



3,628,644
ELECTRICALLY DRIVEN-TYPE ELEMENT

Walter O. Cralle, Jr., Georgetown; Henry W. Simpson, Lexington, both of Ky., and Barry C. Kockler, Statesville, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,837
Int. Cl. B41j *23/32*
U.S. Cl. 197—12 **6 Claims**



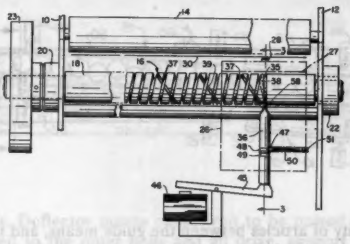
The impact time of an electrically driven-type element is directly sensed and employed to control a direct printer function, such as the impact drive itself or an ancillary printer function such as letter feed or data input control. Actual sensing of the impact point is preferably accomplished by observing the impact-force-induced polarity change of back EMF of a DC motor employed to drive the type element. Back EMF is also employed to control impact drive velocity.

3,628,645
CARRIAGE DRIVE MECHANISM

Earl W. McFeaters, Kettering, and James P. Donohue, Fairborn, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 23, 1969, Ser. No. 868,779
Int. Cl. B41j *19/20*
U.S. Cl. 197—90 **11 Claims**

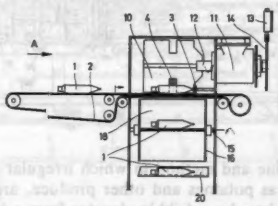
A drive mechanism applicable to high-speed printing apparatus for moving a printing carriage along a path in one direction at a specified rate of travel and for returning the carriage in the opposite direction at a substantially higher rate of travel. The mechanism includes a rotating shaft having helical grooves running axially therealong in both directions, one groove being of a certain depth and the other groove being of a lesser depth. A drive pin rides in the deeper groove along the rotating shaft to move the carriage at the specified rate in the printing operation thereof, and the pin rides in the shallow groove to provide a positive return for the carriage at the higher rate in the nonprinting, or return-to-start operation thereof.



3,628,646
DEVICE FOR TRANSFERRING INDIVIDUAL ARTICLES TO A PACKAGING MACHINE

Wilhelm Schuster, Karlsruhe, and Adolf Grether, Neureut, both of Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

Filed June 25, 1969, Ser. No. 836,535
Claims priority, application Germany, July 20, 1968, P 17 61 913.5
Int. Cl. B65g *47/08, 47/82*
U.S. Cl. 198—22 **8 Claims**



The invention comprises a device for transferring individual articles, such as tubes, bottles, glasses and the like, from the discharge end of a filler and closing machine to the start of a packaging machine. The device comprises at least one horizontally disposed endless transfer band driven in synchronism with an article-receiving conveyor chain of the packaging machine and provided with uniformly spaced pockets, each of which is adapted to receive only a single article to be transferred. From these pockets the individual articles are expelled by a slidable member into a pocket of a pocket wheel from which the articles are discharged one by one onto the conveyor chain of the packaging machine.

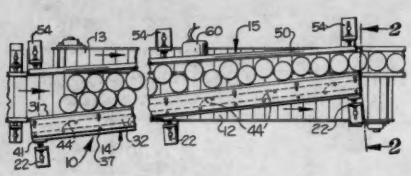
3,628,647
ARTICLE COMBINER

John H. Beard, Salisbury, N.C., assignor to Taylor Manufacturing Company, Salisbury, N.C.

Filed Nov. 12, 1969, Ser. No. 875,773
Int. Cl. B65g *47/22, 47/26*
U.S. Cl. 198—30 **10 Claims**

An article combiner for receiving a plurality of articles advancing abreast and for arranging these articles in tandem relation to form a single row including conveyor means for conveying the articles along a predetermined path, and first and second guide means disposed in converging relation for guiding the articles as they are conveyed, one of the guide means comprising agitating means for agitating articles

brought into contact therewith and buffer means for normally maintaining the articles out of contact with the agitating means but permitting contact therewith upon a jam-up of



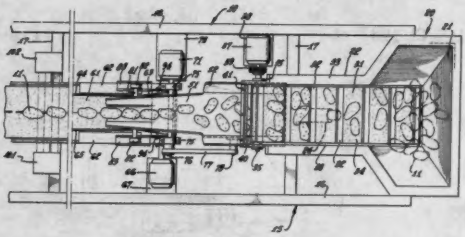
a plurality of articles between the guide means, and the other guide means including a guide rail formed of nonscarring, friction-reducing material.

3,628,648

COMPACT ORIENTING AND SINGULATING SYSTEM FOR IRREGULAR ELONGATED OBJECTS SUCH AS POTATOES

Stanley A. McClusky, 3001 Baylor Ave., Bakersfield, Calif.

Filed Sept. 30, 1969, Ser. No. 862,260
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 **15 Claims**



A machine and method in which irregular elongated objects, such as potatoes and other produce, are conveyed in limited numbers by a dribble elevator from a bin into a concave trough inclined downwardly towards an outlet and vibrating longitudinally to move the potatoes therealong while the potatoes are being oriented by the concavity of the trough into positions, one behind the other, with their major axes disposed longitudinally of the trough until each potato, singly, slides out of the outlet to be engaged by a faster moving V cross section belt and pulled from the outlet thereby, to advance thereon in spaced oriented tandem relationship for sizing.

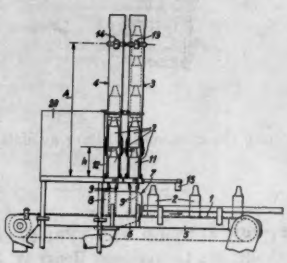
3,628,649

APPARATUS FOR REGULARLY REGROUPING AND DISTRIBUTING OBJECTS FROM DIFFERENT ORIGINS ON A LEADOUT CONVEYOR

Jacques Arvisenet, Le Havre, France, assignor to Sidel, Societe Anonyme, Le Havre, France

Filed Dec. 19, 1969, Ser. No. 886,452
Claims priority, application France, Dec. 31, 1968, 182910
Int. Cl. B65g *47/26*
U.S. Cl. 198—32 **3 Claims**

An apparatus for regularly regrouping and distributing objects from different origins on a leadout conveyor, these objects being fed by a plurality of feed conveyors extending at right angles to the leadout conveyor. The apparatus comprises, for each feed conveyor, a device for detecting the delivery of the objects onto said leadout conveyor, comprising essentially a lock-chamber disposed at the delivery end of the feed conveyor and equipped with means permitting the passage of only one object at a time towards the leadout conveyor, and an input pickup device adapted to be energized only by the permanent presence of an object on said feed conveyor at a point located upstream of said lock-chamber. The apparatus further includes an output pickup responsive to the passage of each object on said leadout conveyor, the



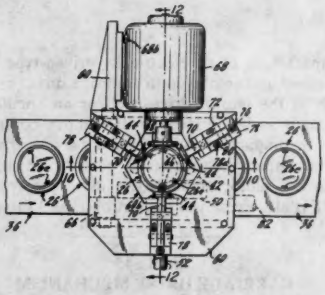
various input pickups and the single output pickup being connected to an electric control device causing the simultaneous opening of the lock-chambers of said feed conveyors in which the permanent presence of objects has been detected by their energized input pickups at a rate of opening inversely proportional to the number of energized input pickups.

3,628,650

APPARATUS FOR ORIENTING CAN ENDS

John Wilson Rouse, Ramsey, N.J., assignor to American Can Company, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,874
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AB **18 Claims**



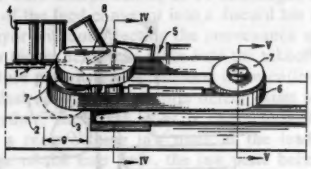
A method and arrangement for orienting an article to a predetermined angular position. The article is embossed with impressions which conform to the rim surface of a rotatable member. A continuously turning wheel rotates the article to bring the embossment to the angular position which coincides with the position of the rotatable member. When such coincidence in positions is attained, the article is moved against the rotatable member so that the latter projects partially into the embossment shaped in the form of a recess facing the rotatable member. The rotatable member is then removed from the article and the latter is removed by a conveyor in oriented position.

3,628,651

DEVICE FOR TILTING ADVANCING CONTAINERS

Willem Wolzak, Landsmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed May 13, 1970, Ser. No. 36,795
Claims priority, application Netherlands, May 14, 1969, 6907412
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AD 3 Claims



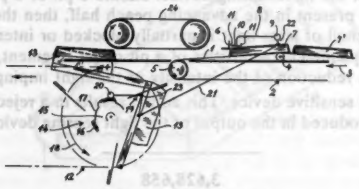
A device for tilting consecutively a row of advancing containers from an upright to a lying position by applying an accelerating force in the feed direction to the bottom of the containers so that the containers fall backwards during their uninterrupted travel.

3,628,652

DEVICE FOR CONTINUOUSLY OPERATING BAND CONVEYERS

Preben E. R. Ørstam, Copenhagen, Denmark, assignor to Skandinavisk Emballage Aktieselskab, Lyngby, Denmark

Filed Aug. 7, 1969, Ser. No. 848,260
Claims priority, application Denmark, Aug. 13, 1968, 3911/68
Int. Cl. B65g 47/30
U.S. Cl. 198—34 9 Claims



A device for continuously operating band conveyors to carry on the transport of conveyed objects, e.g. egg cartons, at a preselected distance from one another in the traveling direction, comprising a conveyor band running over support rollers for said band, stop means provided over the upper advancing part of the conveyor band, a pressure member provided over the conveyor band seen in the traveling direction of the band prior to the stop, the said pressure member being adapted to press an object which has arrived at the stop means downwardly so that the said object may advance beneath the stop means.

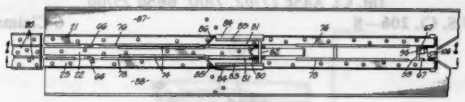
3,628,653

AUTOMATIC DISTRIBUTION SYSTEM FOR FRUIT EMPLOYING TILTABLE CONVEYOR BELT

Aaron James Warkentin, 23561 East Dinuba Ave., Dinuba, Calif.

Filed Feb. 24, 1970, Ser. No. 13,707
Int. Cl. B41j 19/16
U.S. Cl. 198—81 11 Claims

Apparatus and method of distributing fruit such as citrus fruit or peaches and the like to the tables of a packing house characterized by the use of at least three conveyor belts for the fruit, the outer two of which are mounted to be tilted to dump fruit thereon to the tables as desired at time or space



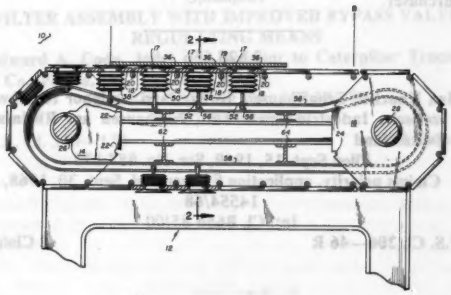
intervals. Deflector means cause fruit to be passed from the inner belt to the outer belts and all drive, support and tensioning means for the outer belts are mounted to be tilted therewith.

3,628,654

VACUUM BELT CONVEYORS

Edward F. Haracz, 161 Pershing Road, Clifton, N.J.

Continuation-in-part of application Ser. No. 860,283, Sept. 23, 1969, now abandoned. This application Oct. 1, 1969, Ser. No. 862,825
Int. Cl. B65g 15/30
U.S. Cl. 198—179 20 Claims



A vacuum belt conveyor is provided comprising an endless belt or carrier formed of a plurality of hinged or linked together plate members and adapted to be driven by suitably powered sprocket wheels in engagement therewith. Each plate member supports a vacuum or suction applying means including an outer cuplike member and an inner extensible bellows or flexible diaphragm member, the latter having a plunger rod and roller mechanism attached to its free end for actuation by a common cam track cooperatively engageable therewith. The cam track is operable to expand each bellows or diaphragm causing it to form a vacuum or suction plenum communicating with the outer cup member through a common aperture provided therebetween for such purpose. Thus, when a flat plate or object is placed on the endless carrier belt in airtight sealing engagement with a plurality of outer cup members and the bellows means associated with each outer cup member is actuated by the cam track means, a plurality of vacuum or suction forces are applied to the underside of the flat plate or object thereby firmly and securely holding it against the endless belt carrier for movement therewith. The cam track means is designed to actuate the bellows units at a predetermined location relative to the path of travel of the belt and to release the bellows units or deactuate them at a different predetermined location along the path of belt movement.

3,628,655

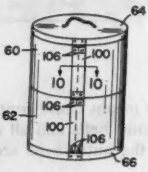
CONVERTIBLE WIG CASE

Philip Bohannon, 2802 West Sitka Street, Tampa, Fla.

Continuation-in-part of application Ser. No. 679,900, Nov. 1, 1967, now Patent No. 3,479,106, dated Nov. 18, 1969. This application Aug. 18, 1969, Ser. No. 850,982

Int. Cl. A45c *11/02*, *7/00*; B65d *25/06*

U.S. Cl. 206—8 6 Claims



A sectional, convertible wig case for storing and transporting a wig and either a wiglet or fall. The case includes a wig stand having a base which partitions the case into two compartments and which may be supported at various heights within the case. Conveniently, the case is fabricated with removable wall sections such that when only the wig is transported, an upper section of the case may be removed to shorten the case and make it easier to carry. To reduce the shipping cost of the case, each section is adapted to be shipped in a flat condition and afterwards easily assembled into its normal cylindrical configuration by the retailer or purchaser.

3,628,656

PACKAGE

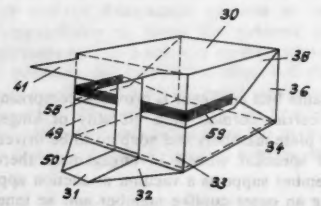
Max Knuchel, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Sept. 15, 1969, Ser. No. 857,873

Claims priority, application Switzerland, Sept. 30, 1968, 14554/68

Int. Cl. B65d *85/00*

U.S. Cl. 206—46 R 2 Claims



The objects to be packed rest on a cardboard bottom and are surrounded by cardboard sides comprised by a collar. A sheet of paper is wrapped all around the box thus formed, including the open top, and glued to the bottom and sides. The overlapping edges of the sheet are also glued together.

3,628,657

METHOD OF AND APPARATUS FOR DETECTING AN OPAQUE OBJECT IN A TRANSLUCENT SUBSTANCE

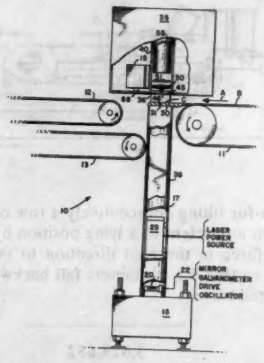
Ronald J. Billett, Sunnyvale, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 15, 1968, Ser. No. 752,857

Int. Cl. B07c *5/342*

U.S. Cl. 209—111.7 19 Claims

The apparatus of the present invention serves to detect a pit or a pit fragment that may remain in a peach half because of an imperfect pit removing operation. Toward this end, a conventional gas laser casts continuously a beam of laser light on a conventional oscillating mirror. In turn, the oscillating mirror, which is located on one side of an advancing peach half, projects an oscillating pencil of laser light through the advancing peach half. On the other side of the advancing peach half and disposed in the path of travel of the oscillating pencil of laser light is a suitable light sensing device. A conventional light diffusing screen intercepts the oscillating pencil of laser light in the absence of a peach half.



While no peach half is in the path of travel of the oscillating pencil of laser light, the diffusing screen diffuses the oscillating pencil of laser light, the intensity of which is sufficient to cause the light sensing device to produce a no reject signal in the output thereof. When a peach half with no pit or pit fragment therein advances through the oscillating pencil of laser light, it diffuses the oscillating pencil of laser light. As a consequence thereof, a no reject signal is produced in the output of the light sensing device. Should a pit or a pit fragment be present in the advancing peach half, then the oscillating pencil of laser light is partially blocked or intercepted by the opaque characteristics of a pit or pit fragment, which causes a reduction of the intensity of the light impinging on the light sensitive device. This action results in a reject signal being produced in the output of the light sensing device.

3,628,658

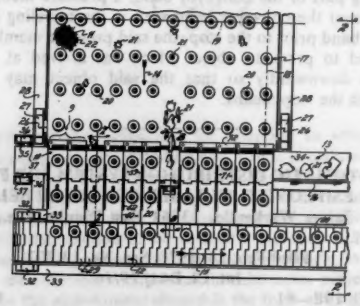
ASSORTING DEVICE

James F. Cotter, Lancaster, Ohio, assignor to Anchor Hooking Corporation, Lancaster, Ohio

Filed Feb. 18, 1970, Ser. No. 12,235

Int. Cl. B07c *5/06*

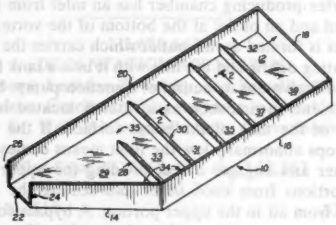
U.S. Cl. 209—125 26 Claims



An assorting device having a vibratory live plate or table for disposition between a feed conveyor and a takeoff con-

veyor for moving articles from the feed to the takeoff conveyor under normal operating conditions, and for segregating certain types of abnormal articles to prevent them from being passed to the takeoff conveyor. The device is especially suitable for use in the manufacture of glassware and especially glass containers such as bottles. The table is characterized in that it comprises a trap door preferably associated with a single column of ware carried by the feed conveyor, the trap door being restrainable in the open attitude to permit an entire column of pieces (in the case of glassware, including malformed ware and/or cullet) to be discharged or assorted at the end of the feed conveyor into a discard bin or a collection conveyor without affecting the conveyance of the other columns or pieces across the table onto the takeoff conveyor; such a feature permits the elimination of an entire column of pieces as desired when a common defect exists among such pieces. Further, each trap door is characterized in that it comprises a reciprocating jaw plate at the leading or upstream edge of the trap door, the jaw plate being yieldably retractable downward at an acute angle from the feed conveyor as required to prevent cullet or chips which are trapped or lodged in the feed conveyor from jamming rigidly against the leading edge of the jaw plate; such feature prevents the leading edge of the table from being unduly nicked or deformed or disfigured to the point that the transfer of pieces across the table is adversely affected.

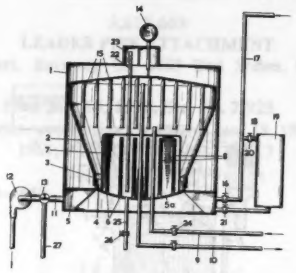
3,628,659
SORTER DEVICE
Emanuel M. Mitchell, 1111 Fordham Lane, Woodmere, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,524
Int. Cl. B07c *7/02*
U.S. Cl. 209—126 **10 Claims**



A sorting tray having a bottom and two upstanding converging sides secured thereto. The ends of these sides which approach each other do not meet but are closely spaced from one another, thereby forming an exit opening. The bottom has a plurality of low transverse upstanding ribs secured thereto defining separate sorting compartments in serial relationship to one another for releasable retention of articles.

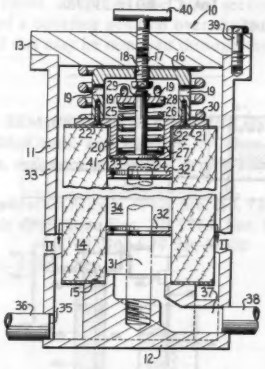
3,628,660
SEPARATOR FOR NONMISCIBLE LIQUIDS
Cornelis In't Veld, Vlaardingen, Netherlands, assignor to Rotterdams Havenreinigingen Transport Bedrijf
Filed Mar. 27, 1970, Ser. No. 23,348
Int. Cl. B01d *35/14*
U.S. Cl. 210—104 **12 Claims**

A separator for nonmiscible liquids such as oil and water comprises a bell immersed in water and into which the oil and water are introduced. The bell floats or not, depending on the quantity of oil it contains, and a control responsive to the upward pressure of the floating bell prevents excessive introduction of oil into the bell. Oil is withdrawn from adjacent the top of the bell and water is withdrawn through an oleophobic filter beneath the bell. The filter can be backwashed with water. An underpressure in the separator



can be maintained either by gravity or by a downstream pump.

3,628,661
FILTER ASSEMBLY WITH IMPROVED BYPASS VALVE REGULATING MEANS
Edward A. Codo, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 26, 1970, Ser. No. 14,484
Int. Cl. B01d *35/14*
U.S. Cl. 210—130 **10 Claims**



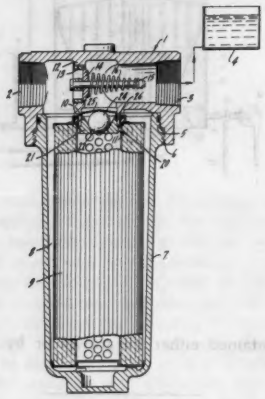
A filter assembly is provided with a bypass valve which is connected by floating support means to a removable cover. The valve is adapted to rest within the end of a filter element and constructed so that the valve-actuating pressure is independent of filter length.

3,628,662

FILTER ANTIDRAIN VALVE ASSEMBLY

Walter J. Kudlaty, Elmhurst, Ill., assignor to Marvel Engineering Company, Chicago, Ill.

Filed Mar. 26, 1970, Ser. No. 22,867
Int. Cl. B01d *35/16*
U.S. Cl. 210—136 3 Claims



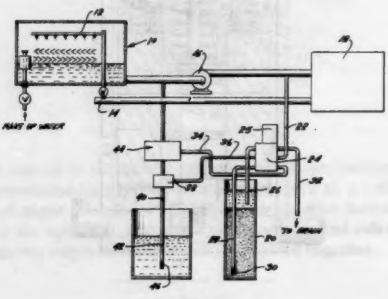
A filter assembly having a one-way valve precluding escape of fluid when the assembly is opened.

3,628,663

AUTOMATIC CONTROL SYSTEM FOR COOLING TOWERS

James J. Derham, Dresher, and Edward R. Morgan, Havertown, both of Pa., assignors to Klenzoid Inc., Philadelphia, Pa.

Filed Aug. 7, 1970, Ser. No. 62,048
Int. Cl. B01d *29/38*
U.S. Cl. 210—141 3 Claims



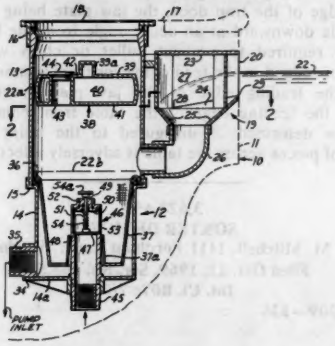
A completely automatic control system for maintaining the chemical integrity of fluids used in a recirculation-type water cooling system such as a cooling tower used to dissipate heat from a gas condenser. In addition to maintaining the chemical purity of the recirculating coolant, the present system automatically filters dirt from the system thus preventing the clogging of vital flow paths therethrough. Chemicals added to the system are periodically refurbished so as to maintain a constant level of concentration thereby effectively combating corrosion, scale formation and the growth of micro-organisms. Filtering of a portion of the recirculating coolant is continuous, being interrupted only for the purpose of backwashing the filter. The backwash operation is effected using the recirculation coolant thus simultaneously effecting bleed off from the system.

3,628,664

MEANS OF SKIMMING A POOL BY USE OF VORTEX

David A. Stanwood, West Covina, Calif., assignor to Swimquip, Inc., El Monte, Calif.

Filed Sept. 4, 1969, Ser. No. 855,177
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 15 Claims



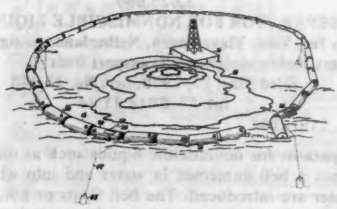
A vortex-producing chamber has an inlet from the surface of a pool and an outlet at the bottom of the vortex chamber. A vortex is formed at this outlet which carries the water with any floating debris and the like with it into a tank from which it can be drawn out by action of a suction pump. In the usual arrangement, means such as a float is located in an upper portion of the tank at the water surface. If the tank water level drops abnormally low the float means comes down with the water and engages a seat dividing the upper and lower tank portions from each other and sealing the lower tank portion from air in the upper portion. A bypass conduit leading from a water source such as the pool itself supplies water to the lower tank portion to supply the pump demand when the lower portion is thus sealed from the upper portion.

3,628,665

FLOATING OIL CONTAINMENT APPARATUS

Lubertus Bakker, Wellsville, N.Y., assignor to The Air Preheater Company Inc., Wellsville, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,637
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 1 Claim



Apparatus for restraining an oil slick floating freely on the surface of a body of water whereby it is at all times under

control and not fee to spread with movement of water to contaminate the surrounding areas. The oil slick controlling apparatus contains oil-water separation means whereby oil may be removed from the oil slick for further utilization.

3,628,666

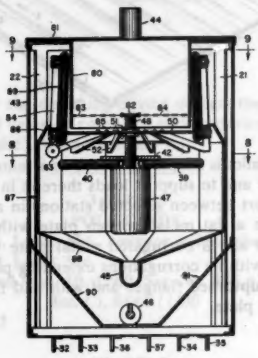
FILTERING MACHINE

Harvey M. Wenger, and Norman E. Archer, both of Holland, Mich., assignors to Wals, Inc.

Filed Feb. 4, 1970, Ser. No. 8,453

Int. Cl. B04b *3/08*

U.S. Cl. 210—370 **13 Claims**



A filtering machine based upon an endless ring-shaped rotating filter blanket continually being turned inside-out to disengage solid particles impinged upon the inside of the filter blanket.

3,628,667

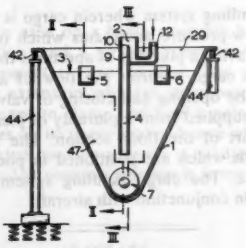
DECANTATION APPARATUS

Zdeno Somora; Ladislav Zavodsky, and Benedikt Kalisky, all of Bratislava, Czechoslovakia, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Sept. 23, 1969, Ser. No. 860,367

Int. Cl. B01d *21/12*

U.S. Cl. 210—519 **32 Claims**



A decantation apparatus comprises a horizontally elongated vessel having a top section and a bottom section and being arranged to be filled to a predetermined level of the top section. Feed means feeds the suspension into the vessel. A distributor chamber extends lengthwise of the vessel substantially coextensive within the top section and receives the suspension from the feed means. An elongated loading well extends lengthwise of the distributor chamber below the same and substantially coextensive therewith. It communicates with the distributor chamber and projects downwardly into the bottom section. A pair of outlet channels extends lengthwise of the loading well at opposite lateral sides thereof at the level of the suspension. Discharge means is provided in the bottom section extending lengthwise of the vessel at least substantially coextensive therewith for discharging the solid component of the suspension which has settled in the bottom section.

3,628,668

LEADER PIPE ATTACHMENT

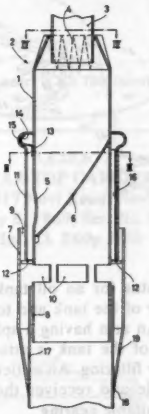
Max Huppert, Bornweg 28, 6483 Bad Soden, Salmunster, Germany

Filed Jan. 14, 1970, Ser. No. 2,925

Claims priority, application Germany, Jan. 18, 1969, July 15, 1969; P 19 02 417.0, G 69 27 952.3

Int. Cl. B01d *35/00*

U.S. Cl. 210—446 **12 Claims**



A leader pipe attachment includes a pipe section mounted between the leader pipe and a standpipe. Dirt coming from the leader pipe is caught on a screen in the pipe section and the rain water spills through a port in the pipe section above the screen into an annular chamber surrounding the pipe section, returning thereinto through inlet ports below the screen. A slidable cover surrounds the pipe section and may be moved out of a covering position over the outlet port so that accumulated dirt may be removed through the port.

3,628,669

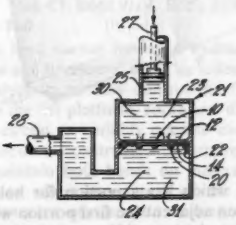
SEMIPERMEABLE MEMBRANES

Charles L. McKinnis, and Charles I. Cohen, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation

Original application May 3, 1968, Ser. No. 726,297. Divided and this application Dec. 22, 1969, Ser. No. 1,940

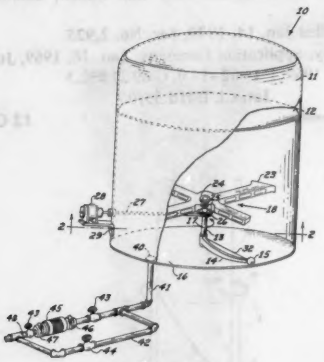
Int. Cl. B01d *39/20, 31/00*

U.S. Cl. 210—510 **2 Claims**



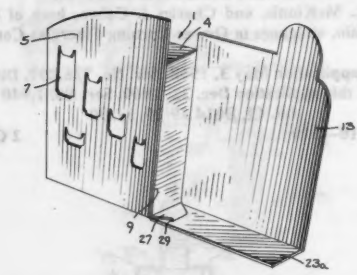
A rigid semipermeable membrane of essentially silica and apparatus and method for making it that includes leaching an inorganic glass film.

3,628,670
OIL-TANK-CLEANING APPARATUS
Ray O. McGuire, 1912 North H St., and Joseph C. Peeper, R. R. 3, both of Elwood, Ind.
Filed Oct. 12, 1970, Ser. No. 79,852
Int. Cl. B01d 21/06
U.S. Cl. 210—528 5 Claims



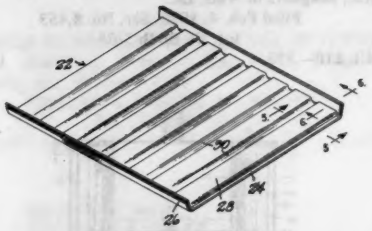
A cleaning apparatus for an oil tank. A rod is rotatably mounted to the floor of the tank and to a frame attached to the tank sidewalls. An arm having a sphere at one end contacting the sidewall of the tank is attached to the rod and receives sediment for filtering. An outlet pipe is connected to the tank via this hole and receives the sediment. A motor drives the rod with suitable gearing.

3,628,671
DISPLAY STAND
Jay F. Schweickart, deceased, late of Lancaster, Ohio (by Beverly J. Schweickart, administratrix), assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Feb. 17, 1970, Ser. No. 12,106
Int. Cl. A47g 29/00
U.S. Cl. 211—73 7 Claims



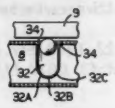
A display stand which has a portion for holding articles and a second portion adjacent the first portion which is offset to the rear thereof so as to provide a storage area for carriers for the displayed merchandise. The stand is formed from a planar blank having hinged marginal portions which contain cooperating flap and slit fastening means.

3,628,672
CAPTIVE PALLET FOR LOAD-STACKING RACKS
Gerald O. Heinz, Streator, Ill., assignor to Streator Dependable Mfg. Co., Streator, Ill.
Filed Jan. 5, 1970, Ser. No. 638
Int. Cl. A47b 96/02; A47f 5/00
U.S. Cl. 211—153 1 Claim



A captive pallet is adapted to serve as a removable shelf in a storage rack and to support loads thereon in said rack and during transport between selected stations in a limited area. The pallet has a flat metal bottom plate with opposite upturned flanges and a corrugated metal plate welded to the bottom plate with its corrugations extending perpendicularly between said upturned flanges and with end flanges welded to said bottom plate.

3,628,673
CARGO-HANDLING SYSTEM
Charles L. Lynn, Jr., Lafayette, Ind., assignor to Lynn Airco, Inc. and Louis Pearlman, Jr., Lafayette, Ind., part interest to each
Filed July 2, 1969, Ser. No. 838,570
Int. Cl. B60v 1/04
U.S. Cl. 214—1 BE 1 Claim

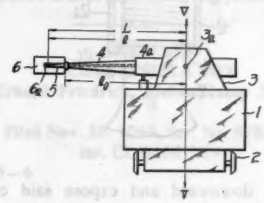


A cargo-handling system wherein cargo is supported on a plurality of low-pressure airstreams which originate from a floor section having a plurality of apertures therein. The positioning of the cargo controls the flow of air through said apertures by the opening and closing of valve means. Compressed air is supplied from a plurality of plenums which are an integral part of the floor section. The preferred valve means are balls which are positioned in pockets below the floor apertures. The cargo-handling system is particularly suited for use in conjunction with aircraft.

3,628,674
INDUSTRIAL ROBOT
Kunio Koike; Akio Mito, both of Kanagawa, and Masayasu Dezaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan
Filed Sept. 18, 1970, Ser. No. 73,315
Claims priority, application Japan, Sept. 24, 1969, 44/75948
Int. Cl. B66c 1/00
U.S. Cl. 214—1 BD 5 Claims

An industrial robot comprising a truck, an arm support base, an arm mounted thereon, a clamp for a load to be carried, a turning device for the arm, and a pump driving the

arm and turning device through directional valves, in which a device is provided for detecting a force applied to the arm and a sliding device is provided for sliding the arm support



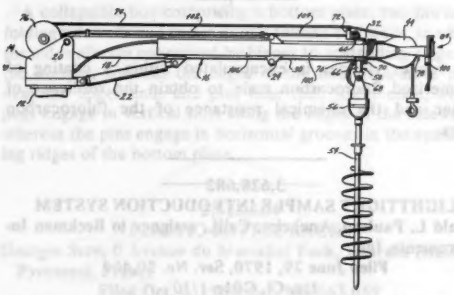
base, whereby the detecting device detects the force over a predetermined value to cause the sliding device to move the arm support base toward the load.

3,628,675

POLE GUIDE

Roy Balogh, St. Louis, Mo., assignor to McCabe-Powers Body Company, St. Louis, Mo.

Filed Sept. 10, 1969, Ser. No. 856,633
Int. Cl. B66f *11/00*
U.S. Cl. 214—3 15 Claims



A pole guide is used on a beam assembly having a fixed beam, an extension, and a pullout extension telescopically mounted with respect to one another. The pole guide is mounted on the extension adjacent its upper end, and includes tongs adapted to clamp and hold a pole. The pullout extension includes on its upper end a sheave which is movable from a retracted position wherein it is adjacent the pole guide to an extended position wherein it is spaced from the pole guide.

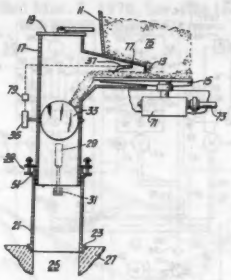
3,628,676

COAL FEEDING SYSTEM FOR MECHANICAL FEED-TYPE LARRY CAR

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed May 6, 1970, Ser. No. 35,010
Int. Cl. C10b *31/02*
U.S. Cl. 214—35 R 4 Claims

In conjunction with a mechanical turntable feed-type larry car, apparatus for keeping the charging hole of a coke oven chamber sealed while charging coal includes telescoping tubes, one of which coacts with the charging hole periphery, and a pivotable shoe that rides on coal on the turntable. When coal is being charged, the shoe, acting through suitable control apparatus, keeps a damper valve open. But, when in-



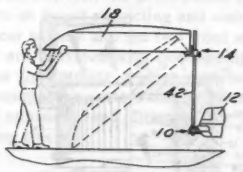
sufficient quantity of coal is on the turntable, the shoe closes the damper valve.

3,628,677

CAR TOP CARRIER

Frank M. Cislaw, 27317 Novi Road, Novi, Mich.

Filed May 5, 1969, Ser. No. 821,665
Int. Cl. B60p *3/10*
U.S. Cl. 214—450 1 Claim



Means for providing a vertical support on and at one end of a car, a carrier member positionable on the support between a lower and rearwardly disposed position and an upper and forwardly disposed position, and means capable of attachment to the roof of the car and for cooperation with the carrier member in its elevated position to support a boat or other member therebetween.

3,628,678

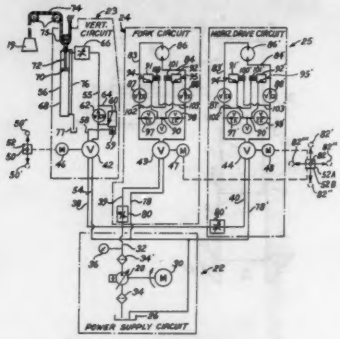
HYDRAULIC LOAD CARRIER

Paul E. Redelman, 16628 S. Elm St., South Holland, Ill., and Gerald M. Kwiatkowski, 14815 S. Wabash, Dolton, Ill.

Filed Apr. 21, 1970, Ser. No. 30,453
Int. Cl. B66f *9/14*; B65g *1/06*
U.S. Cl. 214—730 17 Claims

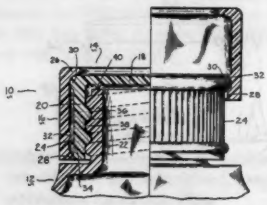
A hydraulic load carrier having a hydraulic powered lift platform, forks and horizontal drive includes variable proportional flow valves to variably control the flow of hydraulic power fluid to the lift platform, forks and drive and an electrical control circuit to variably operate each of the valves. The control circuit is constructed to require the load carrier operator to maintain both hands on manual operating handles in order to effect movement of the lift platform or horizontal movement of the load carrier. In addition, the control circuit includes switches which prevent horizontal movement of the load carrier when the forks are not centered and movement of the forks when the load carrier is moving horizontally. End of run slowdown and cutout means

are also provided in the circuit to slow and stop movement of the forks and the load carrier when they have reached their



end of run and the forks are operable either manually or automatically after manual movement has been initiated.

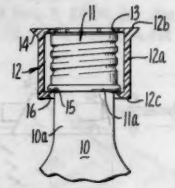
3,628,679
CAP WITH SAFETY SHIELD
Donald F. Armour, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 2, 1970, Ser. No. 72
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **3 Claims**



A safety closure to deter children from opening containers used to store potentially dangerous substances. The closure includes a screw cap or snap-on cap with a fastening portion on the outer surface of its skirt for slidably mounting a shielding sleeve around the skirt. When the closure is in locked position the shielding sleeve surrounds the skirt and covers gripping portion on the outer surface of the skirt. When it is desired to open the closure the shielding sleeve must be manipulated upwardly in a predetermined manner to expose the gripping portion on the skirt. The cap is then removed by holding the cap by the gripping portion and manipulating the skirt.

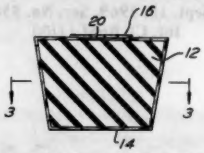
3,628,680
SAFETY GUARD FOR CONTAINER CLOSURES
Danny L. Deaver, 14225 Lora Drive, Los Gatos, Calif.
Filed Nov. 14, 1969, Ser. No. 876,754
Int. Cl. A61j *1/100;* **B65d** *55/02*
U.S. Cl. 215—9 **7 Claims**

A safety guard for containers, such as a bottle having a threaded mouth section and a complemental closure cap, said safety guard more particularly comprising a cylindrical body having an upper opening for receiving the upper end of the closure cap therethrough, said body having inturned flanges at the top and bottom thereof, said flanges being engageable with said closure cap for retaining said body in a position enshrouding said closure cap, the upper flange being rigid though flexible to yield under force and allow said



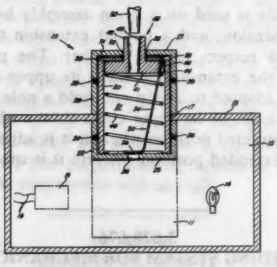
guard to move downward and expose said closure cap through the upper opening.

3,628,681
STOPPER
Solomon Schwartz, Pennsauken, N.J., assignor to Plastics Consulting and Manufacturing Co., Camden,, N.J.
Filed Oct. 6, 1969, Ser. No. 864,063
Int. Cl. B65d *39/00*
U.S. Cl. 215—48 **4 Claims**



A rubber stopper is encapsulated within a coating of polymerized fluorocarbon resin to obtain the resilience of rubber and the chemical resistance of the fluorocarbon resins.

3,628,682
LIGHTTIGHT SAMPLE INTRODUCTION SYSTEM
Gerald L. Paulson, Anaheim, Calif., assignor to Beckman Instruments, Inc.
Filed June 29, 1970, Ser. No. 50,464
Int. Cl. G01n *1/10*
U.S. Cl. 220—20.5 **16 Claims**



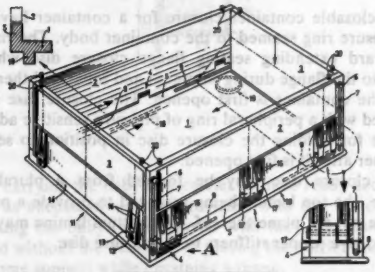
Apparatus for introducing a sample into a housing while preventing the introduction of light thereinto, the housing having an access opening therein, wherein a cylinder is mounted in the opening in the housing, the cylinder partially extending into the housing and being open at both ends thereof. A shutter is mounted for movement between a first position blocking the opening at the inner end of the cylinder and a second position providing access to the housing. A piston is mounted for movement through the cylinder, the piston lightsealing the opening through the cylinder. The

piston has a passageway therethrough which is adapted to receive, in lighttight relationship, a sample introduction device, such as a pipette. The piston further includes means for engaging and actuating the shutter, such actuating means moving the shutter from the first position to the second position as the piston is depressed into the cylinder.

3,628,683
COLLAPSIBLE BOX

Wolfgang Erhard Friedrich, Bieber Kamp 31, Lendringsen, Germany

Filed Nov. 20, 1969, Ser. No. 878,415
Int. Cl. B65d 7/24
U.S. Cl. 220—6 **7 Claims**

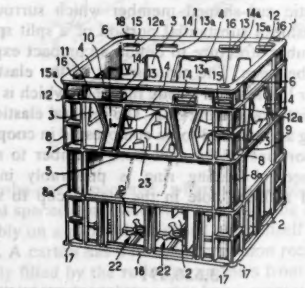


A collapsible box comprising a bottom plate, two inwardly folding sidewalls and two inwardly folding end walls, in which the sidewalls are connected by hinges to upstanding ridges of the bottom, whereas the edges of the end walls have pegs near the upper ends and pins near their lower ends, which pegs engage in vertical slots along the edges of the sidewalls, whereas the pins engage in horizontal grooves in the upstanding ridges of the bottom plate.

3,628,684
PLASTIC BOTTLE RACKS

Georges Sere, 8 Avenue du Marechal Foch, Lourdes (Hautes-Pyrenees), France

Filed Oct. 2, 1969, Ser. No. 863,059
Claims priority, application France, Oct. 3, 1968, 16,8665
Int. Cl. B65d 1/24, 21/02
U.S. Cl. 220—21 **8 Claims**

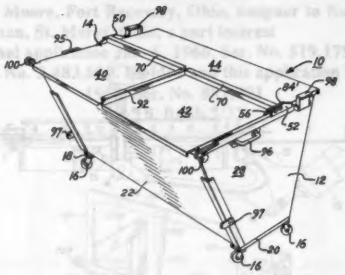


Bottle racks made of plastic material, comprising at their upper part, four handling openings having a trapezoidal form and undulated edges without any sharp angles.

3,628,685
REFUSE CONTAINER

Richard J. Gordon, Grand Junction, Iowa, assignor to Parker Industries, Inc., Silver Lakes, Ind.

Filed Mar. 5, 1970, Ser. No. 16,773
Int. Cl. B65d 51/18
U.S. Cl. 220—29 **9 Claims**

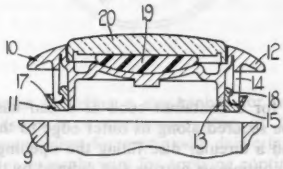


A refuse container having walls and bottom forming an enclosed container with an open top, and a cover for the top having a rear and two front sections, with the rear section being pivoted to the upper edge of two opposite walls, and the front cover sections being pivoted to the rear cover section. A flange is provided on the front cover section which overlaps the axes between the pivot points of the rear cover section to form an insect restricting and water-repellent joint between the rear section and the two front sections. The two front sections are provided with overlapping flanges on the adjacent edges for forming a joint therebetween, and the container is mounted on casters and includes fixtures for use in lifting the container and dumping the contents into a refuse-collecting truck.

3,628,686
MEANS FOR SUPPORTING A MEMBER IN A BORE

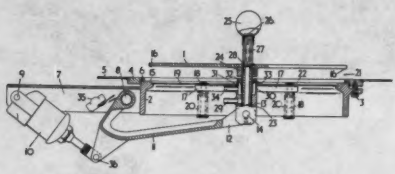
Harold William Burton, and Harry Herbert Reynolds, both of Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 10, 1969, Ser. No. 883,902
Claims priority, application Great Britain, Dec. 20, 1968, 60,805/68
Int. Cl. B65d 5/64
U.S. Cl. 220—42 B **4 Claims**



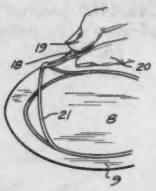
A plastic member to be supported in a cylindrical bore and comprising two parts, one of the parts having an annular edge to engage the bore, and the parts having respective snap-engaging formations, the formations on at least one of the parts being formed during molding of that part.

3,628,687
STORAGE TANKS
Alexander Arthur Townsend, Crawley, Sussex, England, assignor to The A.P.V. Company Limited, Crawley, Sussex, England
Filed Aug. 12, 1969, Ser. No. 849,455
Claims priority, application Great Britain, Aug. 16, 1968, 39,286/68
Int. Cl. B65d *51/16, 43/16*
U.S. Cl. 220—44 R 11 Claims



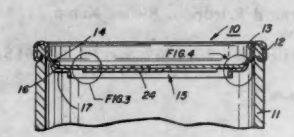
In order to provide both access and venting openings to storage vessels, particularly for large quantities of food liquids, which vessels need to be cleaned often, a manway access door is provided with has a partially open stable position which may be used for venting during cleaning. The door is preferably part of a subassembly on its own frame for ease of removal and replacement for repair and maintenance. Spray devices for spraying cleaning liquids inside and outside may be provided.

3,628,688
CLOSURE MEMBER FOR A CONTAINER
Nils Olof Haggard, Malmo; Bertil Sven Oskar Murne, Malmo, and Kjell Mosvoll Jakobsen, Hohog, all of Sweden, assignors to AB Platmanufaktur, Malmo, Sweden
Continuation of application Ser. No. 622,966, Mar. 14, 1967, now abandoned. This application May 26, 1970, Ser. No. 40,614
Int. Cl. B65d *43/02, 17/00*
U.S. Cl. 220—47 5 Claims



A closure for a container such as a can has a flat ring adapted to be secured along its outer edge to the rim of the container and a circular disc filling the opening of the ring except for a continuous narrow slot defined by the inner and outer peripheral outlines of the ring and the disc, respectively. Strips of an elastic plastic disposed on opposite sides of the ring and the disc cover the slot along its length and overlie the adjacent marginal portions of the ring and the disc. The strips are joined by a continuous neck portion extending through the slot thereby holding the disc in position and sealing it to the ring. Upon stripping of the upper strip the disc is exposed for removal, the remaining lower strip providing a smooth lining for the inner rim of the ring.

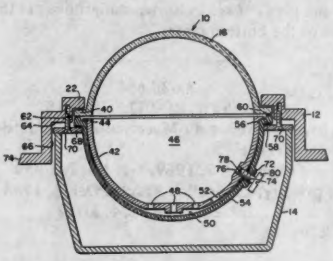
3,628,689
RECLOSABLE END STRUCTURE FOR CONTAINER BODY
Roy E. Rogers, Glendale, Mo., assignor to Container Corporation of America, Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,238
Int. Cl. B65d *17/24, 5/64, 43/00*
U.S. Cl. 220—53 3 Claims



A reclosable container closure for a container having an end closure ring seamed to the container body. The ring has an inward extending seating flange closure disc which is sealed to the flange during shipment and separated therefrom when the container is first opened. The closure disc also is provided with a peripheral ring of pressure sensitive adhesive suitable for holding the closure disc in position to seal the container after it is first opened.

The closure disc may be formed from a plurality of laminae, the top lamina being arranged to provide a pull tab foldable out the plane thereof. The bottom lamina may be of metal to give proper stiffness to the closure disc.

3,628,690
EXPANSION CHAMBER CONSTRUCTION
Allen Butman Sherman, Pembroke, Mass., assignor to E. S. Ritchie & Sons, Inc., Pembroke, Mass.
Filed Feb. 3, 1970, Ser. No. 8,343
Int. Cl. B65d *25/26;* G01c *17/08;* F16c *55/04*
U.S. Cl. 220—85 B 4 Claims

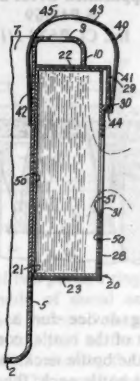


An expansion chamber construction for a compass includes an elastic cup-shaped member which surrounds in resting relationship a substantial portion of a split spherical fluid tight chamber structure to define a compact expansion chamber therebetween. The circular rim of the elastic cup-shaped member has integral elastic flange on which is formed an upstanding integral sealing ring. The integral elastic flange and sealing ring are adapted to be compressed in cooperation with flanged portions of the split fluid chamber to seal the chamber. A second sealing ring is preferably integrally formed around a filling hole in the elastic cup to seal the filling hole.

3,628,691
TISSUE HOLDER AND ATTACHMENT THEREFOR
Ernest C. Hillman, 1277 S. Adams St., Glendale, Calif.
Filed Mar. 26, 1970, Ser. No. 22,833
Int. Cl. B65h *1/00*
U.S. Cl. 221—45 3 Claims

A box having an open back and a slotted front wall, holds folded tissue napkins or handkerchiefs (termed tissues)

therein which are removably through the slot in the front wall. The box is held by a clamp to the foot end of a baby carrier in a position to allow ready access to the tissues by any person carrying the baby carrier. The device allows a



person carrying the baby in a carrier to have ready access to tissues as needed by extracting tissues with one hand while supporting the baby in the carrier with the other hand and arm and without the necessity of placing the carrier and baby upon some support while obtaining a tissue.

3,628,692

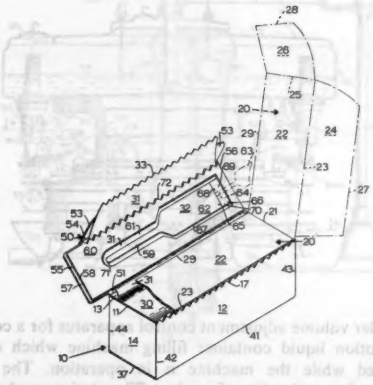
PACKAGE FOR STORING AND INDIVIDUALLY DISPENSING THIN SHEETLIKE ARTICLES, ESPECIALLY PROBE COVERS

Robert A. Blatz, 5843 Four Oaks Ln., Clayton, Calif.

Filed May 13, 1970, Ser. No. 36,969

Int. Cl. B65h *5/28*

U.S. Cl. 221—70 **24 Claims**



A probe-cover package, wherein a series of identically oriented spaced-apart flattened plastic probe covers are held releasably on a paper sheet rolled about itself into a cylindrical roll. A carton has a receptacle portion receiving and substantially filled by the roll. The carton's front wall has a serrated upper cutting edge, and it has a protective inner cover and an outer cover, both connected integrally to the carton. The inner cover closes the receptacle portion and protects the roll of probe covers. Secured at the side edges only of the inner surface of the outer cover is a stiff frame member which extends beyond the outer cover at one end. The frame member has a cutout opening a little larger than a probe cover and has a serrated cutting edge adjacent a fold line connecting the outer cover to a forward flap. A leading strip of the cylindrical roll passes between the frame member and the outer cover. A single probe cover can thereby be exposed through the cutout opening to enable a probe to pick up that cover while the other covers remain protected.

3,628,693

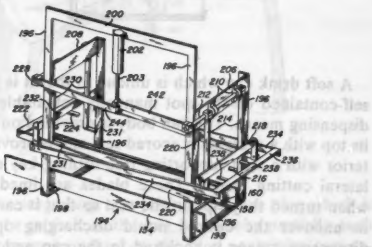
STACKED PALLET SUPPORT AND DISPENSER APPARATUS

Jesse C. Moore, Fort Recovery, Ohio, assignor to Norman H. Kuhlman, St. Marys, Ohio, a part interest

Original application Jan. 6, 1966, Ser. No. 519,179, now Patent No. 3,483,600. Divided and this application Dec. 4, 1969, Ser. No. 881,991

Int. Cl. B65h *3/22*

U.S. Cl. 221—223 **4 Claims**



Apparatus for retaining a stack of pallets or carrier members and for dispensing the lowermost pallet or carrier while retaining the other pallets in the stack thereof.

3,628,694

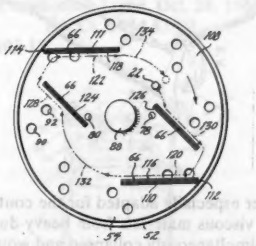
APPARATUS FOR PACKAGING MEDICINAL TABLETS OR THE LIKE

Matthew Nichols, Norristown, Pa., assignor to Sauter Packaging Company, Souderton, Pa.

Filed Apr. 8, 1970, Ser. No. 26,616

Int. Cl. B65b *35/08, 35/30*

U.S. Cl. 221—265 **6 Claims**

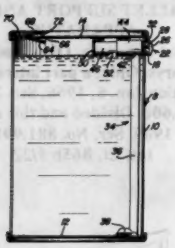


An apparatus including a mechanism for making tablet receiving blisters in a continuous strip of thermoplastic material, a mechanism for continually delivering tablets one to each blister, a mechanism for applying continuous sealing strip to the thermoplastic strip to seal the said tablets within the blisters, a mechanism for perforating or scoring the laminated strip to permit easy severance of the strip into segments comprising one or more blisters, the apparatus being characterized by the provision of an easily mounted and dismounted adapter plate whereby tablets of different sizes may be packaged in the same strip by merely changing the indexing plate and without dismantling or modifying any of the other mechanisms comprising the apparatus.

3,628,695
BEVERAGE CONTAINER DRINKING SPOUT

Clifford F. Bryant, Smithfield, Ohio, assignor to Josephine Harris, Smithfield, Ohio, a part interest

Filed July 16, 1970, Ser. No. 55,485
Int. Cl. B67b 7/26
U.S. Cl. 222—89 9 Claims

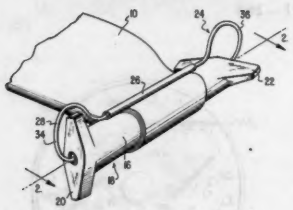


A soft drink can which is unique in that it is provided with self-contained on-the-spot manually actuatable opening and dispensing means. The can body is provided on one side near its top with a marginally scored seal and is provided on its exterior with a stud-supporting free-turning key equipped with lateral cutting blades. These blades are lined up with and when turned they rip out the seal so that it can be dislodged to uncover the desired liquid discharging opening. Novel dispensing means is enclosed in the can and is cooperable with the seal and comes into play when the seal is removed. This means embodies a projectable spout which can be used for pouring or drinking at will.

3,628,696
DISPENSER FOR FLEXIBLE WALL TUBE CONTAINERS

Marion A. Duiker, 1974 Collingswood Road, Columbus, Ohio

Filed July 28, 1970, Ser. No. 58,954
Int. Cl. B65d 35/32
U.S. Cl. 222—99 4 Claims



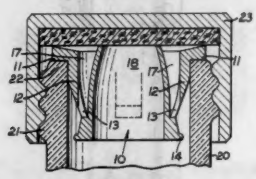
A dispenser especially adapted for the controlled extrusion of relatively viscous materials from heavy-duty plastic tubes. The tube is simultaneously collapsed and wound upon a mandrel in such a manner that once collapsed, it will not expand; and once wound, it will not unwind.

A tube-collapsing roller is mounted for planetary movement relative to a winding mandrel through the intermediary of a spring wire. The spring wire is formed with looplike projections on either end of the roller to bias the same toward the mandrel which has angularly offset turning lugs at either end of a tube-engaging periphery. Simultaneous counterrotative manual manipulation of one of the lugs and projections results in the collapse and winding of a tube about the mandrel. The offset relationship of the lugs insures that one or the other of the same will always be in position for ready manipulation and the loop projections impart a sufficient resilient bias to the roller to maintain the tube in a wound, collapsed position on the mandrel.

3,628,697
DRIP-PREVENTING DEVICE FOR BOTTLE

Lucy Gwyneth Dowson, Wrexham, Wales, assignor to D. P. (Inserts) Limited, Wrexham, Wales

Filed Jan. 21, 1970, Ser. No. 4,476
Claims priority, application Great Britain, Feb. 8, 1969, 6,948/69
Int. Cl. B67d 1/16
U.S. Cl. 222—111 4 Claims

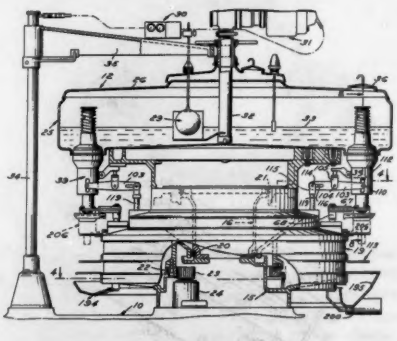


A drip-preventing device for a bottle intended to be located in the outlet of the bottle, comprising a funnel coaxial with the neck of the bottle neck and a ring forming part of or engaging with the bottle neck, the funnel being connected to the ring in such a way that a lip of the funnel is annularly spaced at all parts of its periphery from the lip of the bottle outlet.

3,628,698
LIQUID FILLING MACHINE WITH AUTOMATIC FILLER VOLUME ADJUSTMENT CONTROL

Robert J. Allen, Farmington; Philip C. Martin, Walled Lake, and Vacys Urbonas, Redford Township, Wayne County, all of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.

Filed Feb. 16, 1970, Ser. No. 11,633
Int. Cl. B65b 3/30
U.S. Cl. 222—168 3 Claims



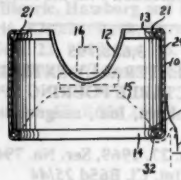
A filler volume adjustment control apparatus for a continuous motion liquid container filling machine which can be operated while the machine is in operation. The filling machine has a plurality of product filler stations and each of the stations has a calibration sleeve which can be selectively moved by a power operated control means for increasing and decreasing the volume of each of the filler stations simultaneously, and by small volume increments. The filling machine is provided with a fixed drain trough so that the filling stations can be cleaned simultaneously in place with the use of the automatic filler volume adjustment control apparatus. The volume adjustment control apparatus is push-buttoned controlled. Each filler station is provided with a dual orifice spray diffuser which can be set in one position for light viscosity products and in another position for heavy viscosity products.

3,628,699

DIRECTIONAL CLOSURE FOR A CONTAINER

Richard F. Hendrickson, Erie, and Roderick V. King, Girard, both of Pa., assignors to Sterling Seal Company, Erie, Pa.

Filed Sept. 5, 1968, Ser. No. 757,552
Int. Cl. B65d *83/14*
U.S. Cl. 222—182 8 Claims



The cap is made up of two parts, a ringlike hollow cylindrical body preferably made of metal and a thermoformed plastic top with a formed recessed shape for orientation of the valve button to the top part of the cap. The outer rim body has two recesses for orienting the plastic top with regard to the metal body. The metal body has two inwardly formed lugs. These lugs align the plastic top with the metal body. The plastic top has two notches that mate with the lugs and a recess that fits the valve and this orients the cap. Thus, the top can be removed from the metal body leaving the metal body oriented with the can.

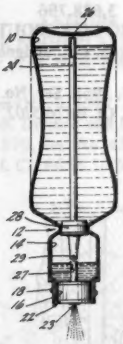
In another embodiment, the top is formed in a valleyed shape oriented to the body and attached permanently to it by means of a pressure sensitive tape. The lower rim of the cap is curled in such a way as to make it a permanent part of the container.

3,628,700

PREMEASURED LIQUID SPRAY AND FOAM DISPENSER

Robert J. Dodoghue, 900 Windsor Ave., Windsor, Conn.

Filed June 2, 1969, Ser. No. 829,553
Int. Cl. B65d *37/00*
U.S. Cl. 222—207 4 Claims



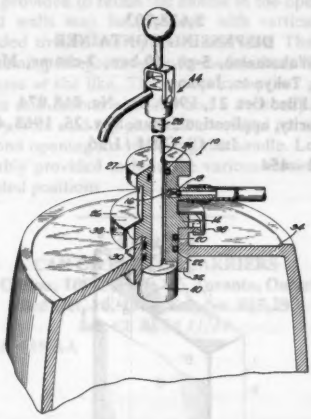
A container and closure assembly has a resilient lower storage chamber and a transparent upper dispensing chamber defined either in one unitary body, or in two units which are releasably secured to one another. A transfer tube in a fitment between the chambers serves to transfer a predetermined quantity of liquid from the lower to the upper chamber upon squeezing the lower one. The upper portion of the dispensing and measuring chamber has discharge orifices defined therein, or in an insert provided in a top opening thereof. The insert may comprise either an orifice pattern, an atomizing spray nozzle, or a foam nozzle and may be capped off by a conventional cap.

3,628,701

TAPPING APPARATUS FOR BEVERAGE KEGS

Thomas L. Kissel, 606 South Rural St., Hartford, Wis.

Filed Sept. 19, 1969, Ser. No. 859,451
Int. Cl. B65d *83/14*
U.S. Cl. 222—400.7 6 Claims



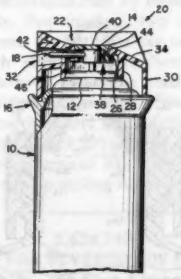
A tap for beverage kegs comprising a hollow plug which is inserted into the taphole of the keg, to thereby partially push the taphole stopper into the keg, the plug containing two external O-ring seals which provide a seal between the plug and the taphole and one internal O-ring seal provided above the gas inlet of the plug to thereby provide a seal between the tap rod and the plug as the rod is pushed through the plug to completely remove the stopper from the taphole. The internal O-ring also provides a seal for the gas which is supplied to the keg.

3,628,702

CAP FOR AEROSOL CONTAINER

Eiichi Kimura, No. 198, 3-chome, Kamifukushima-kita, Futushima-ku, Osaka-shi, Japan

Continuation-in-part of Ser. No. 677,256, Oct. 23, 1967, Pat. No. 3,454,200.
Filed Feb. 10, 1969, Ser. No. 798,040
Claims priority, application Japan, Oct. 28, 1966, 41/100226
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.13 3 Claims



A cap for an aerosol container which has a valve button extending upwardly from the center thereof having a nozzle extending outwardly from the valve button and a head portion and a sealing rim on the upper part of the container, the cap having a concave upper surface with a center guiding well defining a central opening in which an inner lid slides above and in contact with the valve button, depending inner and outer cylindrical walls adapted to engage the head portion and sealing rim respectively of the container, a longitu-

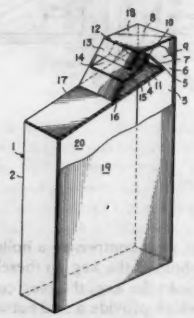
dinal opening extending through the inner and outer cylindrical walls and the guiding wall communicating with the central opening, and a finger slot in the upper surface extending from the outer cylindrical wall to the central opening and located on the opposite side of the cap from the longitudinal opening.

3,628,703

DISPENSING CONTAINER

Katsuhiko Wakamatsu, 5-go, 10-ban, 2-chome, Momoi, Suginam-ku, Tokyo-to, Japan

Filed Oct. 21, 1969, Ser. No. 868,074
Claims priority, application Japan, Nov. 25, 1968, 43/85623
Int. Cl. G01f *11/26*
U.S. Cl. 222—454 **2 Claims**



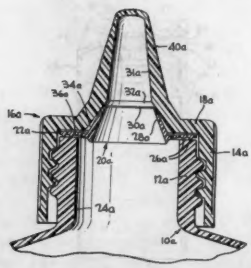
There is described a dispensing container particularly suitable for powdery, granular or the like materials, whereby a predetermined amount of the content material may be dispensed at every one tilting operation of the container, such container being provided on top of the body thereof with a chamber adapted to control the amount of the content material to be dispensed.

3,628,704

CONTAINER WITH VENTING GASKET

Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,870
Int. Cl. B67d *3/00*
U.S. Cl. 222—513 **3 Claims**



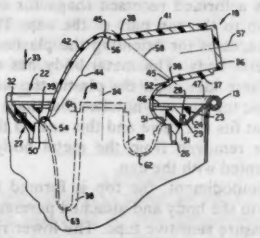
A combination gasket and venting member including a gasket portion clamped between the closure cap and the neck of a container in sealing engagement with the neck and further including a flexible annular diaphragm encircled by the gasket portion. The diaphragm extends over the filling and dispensing opening of the container neck and defines a centrally located valve port communicating with such opening and adapted to seat against the underside of the closure cap. A groove extending across the upper face of the gasket portion from the outer periphery of the latter, where it communicates with the atmosphere, admits atmospheric air above the diaphragm to depress the central portion thereof away from the closure cap when atmospheric pressure exceeds the pressure within the container, thus to admit atmospheric air through the port into the container. In one embodiment the closure cap is formed with an outlet opening positioned for communication with the said port.

3,628,705

LONG REACH LATERALLY EXTENDABLE AND RETRACTABLE POURING SPOUT

Mahlon E. Rieke, Auburn, Ind., assignor to Rieke Corporation, Auburn, Ind.

Filed Jan. 27, 1969, Ser. No. 794,001
Int. Cl. B65d *25/44*
U.S. Cl. 222—527 **6 Claims**



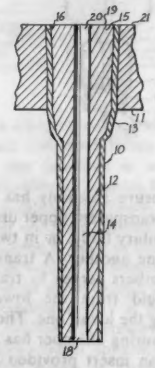
A normally nesting, extensible spout has a portion between its mounting and its outlet which varies in length from the mounting to the outlet at various locations around its circumference so that as it is pulled from the nesting condition to the extended condition, it assumes an attitude placing the outlet at a location sufficiently offset from the mounting area to facilitate pouring from containers without spillage of effluent onto the top of the container.

3,628,706

LONG LIFE SPOUT

Chester F. Todd, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Oct. 15, 1968, Ser. No. 767,729
Int. Cl. B67d *5/02*
U.S. Cl. 222—567 **7 Claims**



A long life pouring spout for pouring molten metal in a continuous casting system, wherein the body of the spout is

fabricated of graphite and an insulating shield surrounds the pouring spout and prevents air from contacting the outside surface of the pouring spout.

3,628,707

PACKING CONTAINER FOR SCATTERABLE PARTICULATE MATERIAL

Erhard Hieke, Hamburg-Stellingen, Germany, assignor to Norddeutsche Affinerie, Hamburg and C. F. Spiess & Sohn, Chemische Fabrik, Kleinkarlbach, Germany

Filed Sept. 23, 1969, Ser. No. 860,314
Claims priority, application Germany, Sept. 28, 1968, G 67 52 970
Int. Cl. B65d *25/48*
U.S. Cl. 222—567 **6 Claims**

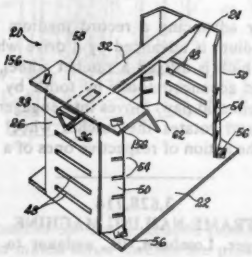
A combination package and spreader for scatterable particulate solid material such as seed or fertilizer including a container, suitable for holding the particulate material, having at least one lower edge, which edge has at least one aperture therein and means to keep this aperture closed during shipment of the container; and a spreader surface means removably attached to the container below the orifice for receipt of material exiting the container through the orifice and direction of this material in a spreading pattern on a suitable surface. The spreader means suitably flares outwardly from the container and may be arcuate about a longitudinal axis.

3,628,708

CARRIERS FOR FOOD PLATES AND THE LIKE

Wallace B. Daughrty, 715 West Elm St., Arlington Heights, Ill.

Original application Oct. 9, 1967, Ser. No. 673,712, now Patent No. 3,517,868. Divided and this application June 10, 1970, Ser. No. 45,012
Int. Cl. B65d *5/46, 5/48*
U.S. Cl. 224—45 G **10 Claims**



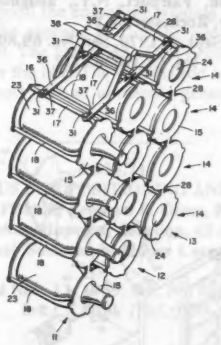
The carrier, made of foldable material, such as corrugated cardboard, solid fiberboard, paperboard, molded pulp, or various solid or foamed plastics, or laminates of these or other materials, for example, comprises a bottom wall, first and second end walls extending upwardly from said bottom wall, and a handle extending between said first and second end walls, said handle having a horizontal panel and downwardly folded stiffening flanges thereon. The handle is folded from one end wall and is adapted to extend through an opening in the other end wall. The handle and the opening are preferably triangular in shape. Locking means are preferably provided to retain the handle in the opening. Each of the end walls may be provided with vertical retaining flanges folded toward the opposite end wall. The end walls and the retaining flanges may be formed with a series of slots to hold plates or the like. The carrier comprises a top panel folded from said second end wall and a vertical panel folded downwardly from said top panel. The vertical panel is formed with a second opening for receiving the handle. Locking tabs are preferably provided to hold the various retaining flanges in their folded positions.

3,628,709

CAN OR BOTTLE CARRIERS

George K. Clifton, 105 Christie St., Toronto, Ontario, Canada

Filed Oct. 10, 1969, Ser. No. 865,293
Int. Cl. B65d *11/14*
U.S. Cl. 224—45 AA **10 Claims**



A unit holder for a generally cylindrical object such as a beverage bottle or can comprises first and second end members peripherally interconnected by three or more angularly spaced-apart struts. For loading, two adjacent struts are pulled apart to permit the bottle or can to be introduced into the unit and such struts then resiliently return to their nondistorted positions to retain the bottle or can within the unit. Multiunit holders comprising a plurality of such unit holders are also described and such multiunit holders having linear configurations can be detachably coupled together by coupling straps to any desired size. Handles are usefully integrally formed on such coupling straps.

3,628,710

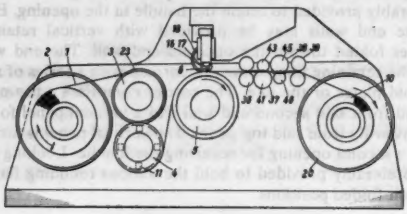
APPARATUS FOR SEVERING OF METAL BAND

Max Stehle, Mannheim, and Egon Kirchner, Mannheim-Feudenheim, both of Germany, assignors to Brown Boveri & Cie Aktiengesellschaft, Mannheim-Kafertal, Germany

Filed Aug. 26, 1968, Ser. No. 791,821
Claims priority, application Germany, Aug. 24, 1967, P 16 27 153.7
Int. Cl. B26f *3/00*
U.S. Cl. 225—96.5 **9 Claims**

Apparatus for severing a metal band with a chip-removing tool includes drawing off a metal band from a supply reel,

feeding the metal band for a given peripheral angle about a support roller in a groove-forming apparatus, cutting in the metal band and lengthwise thereof at least one groove having a depth equal to at least half the thickness thereof with a tool adjustable during the cutting operation in a direction transverse to the direction of feed of the metal band, and finally separating the remaining material at the bottom of the groove along the groove so as to divide the metal band into at least two bands, and apparatus for carrying out the method.

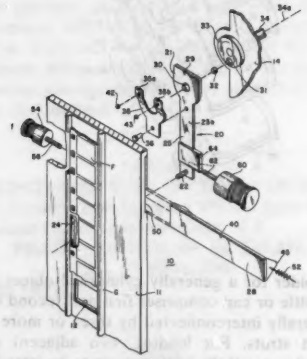


3,628,711

INTERMITTENT FILM-FEEDING MECHANISM

William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,807
Int. Cl. G03b *1/22*
U.S. Cl. 226—49 **9 Claims**



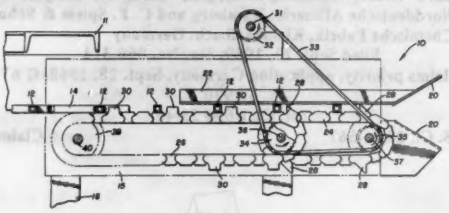
An intermittent film-advancing mechanism especially suitable for use in film projection apparatus comprises a rigid claw member having a film-engaging projection disposed in and guided by a slot provided in a supporting wall. An eccentric cam arrangement drives a follower portion of the claw member to provide the requisite up-down projection movement. A ramp member is provided intermediate between the follower portion of the claw member and the film-engaging projection, and has two symmetric inclined surfaces, the first corresponding to a forward mode of projection and the second corresponding to a reverse mode of projection. Means are provided to selectively position either the first or second inclined surfaces in an engaging relation with the claw member so that in response to up-down movement the projection will reciprocate with the requisite in-out film-engaging movement. An important feature of the invention is the provision of means corresponding to a still mode of projection for engaging the claw member to prevent the projection from engaging the perforations of the film.

3,628,712

MILLSTOCK FESTOONING CONVEYOR

Fred E. Clark, Akron, Ohio, assignor to Akron Standard, division of Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed June 1, 1970, Ser. No. 41,916
Int. Cl. B65h *17/42*
U.S. Cl. 226—104 **4 Claims**



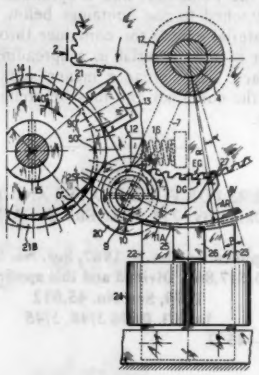
Apparatus for use with a batch-off unit to reposition the outboard ends of spaced cantilever bars for festooning rubber stock from a sheeting or mixing mill, calender, or extruder for cooling, drying, storage and letoff.

3,628,713

MECHANISM FOR THE STEP-BY-STEP TRANSPORT OF DOCUMENTS

Jacques Roland Deproux, Sevres, France, assignor to Societe Industrielle Honeywell Bull

Filed Jan. 15, 1970, Ser. No. 3,097
Claims priority, application France, Jan. 29, 1969, 6901792
Int. Cl. B65h *17/22*
U.S. Cl. 226—157 **8 Claims**



Apparatus for advancing a record medium step by step wherein the medium is advanced by a drive wheel mounted on a shaft to which is affixed a ratchet wheel, wherein the ratchet wheel is advanced tooth by tooth by an actuating pawl, and wherein said pawl moves into engagement with the ratchet wheel and rotates the ratchet wheel through one tooth pitch by the action of respective ones of a pair of cams.

3,628,714

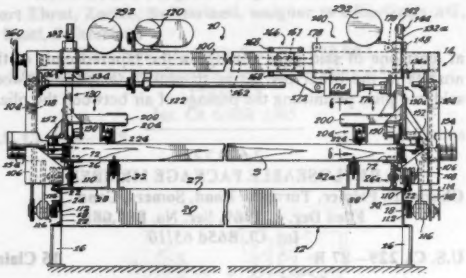
FRAME-NAILING MACHINE

Josef Offenwanger, Lombard, Ill., assignor to Signode Corporation

Filed Jan. 19, 1970, Ser. No. 3,746
Int. Cl. B27f *7/02*
U.S. Cl. 227—7 **19 Claims**

A framing machine for assembling skeleton frames such as wall sections made of 2 by 4 inch studs and plates. The fram-

ing machine includes a support bed defining a work surface, and which bed guides a traveling work carriage driven therealong from one end to the other. The plates are spacedly supported in a parallel relationship on the work surface and the studs are perpendicularly positioned intermediate the plates. The traveling work carriage moves along



the plates continuously, traversing the studs and sensing the location of each stud, whether single or multiple abutting, to actuate an associated fastener driver carried by the carriage. Fastener drivers are provided at each side to drive at least two fasteners into each stud, through each abutting plate, thereby to assemble a wall section.

3,628,715

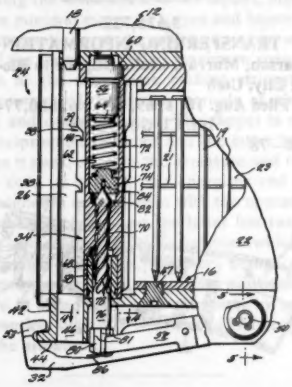
FASTENER FEED MECHANISM

George A. Maynard, Coventry, R.I., and Peleg B. Briggs, Jr., Mystic, Conn., assignors to Textron Inc., Providence, R.I.

Filed June 5, 1970, Ser. No. 43,814

Int. Cl. B25c *1/00*

U.S. Cl. 227—136 **5 Claims**



A feed mechanism for use in headed fastener driving apparatus wherein mated screw threads are provided on a turret member and feed screw to rotate said turret member and move a headed fastener from a magazine into a driving passage. Said feed mechanism is further characterized by the use of a pawl to limit the rotation of said feed screw and wherein said pawl is resiliently attached to said driving apparatus by the use of a shock absorbing element.

3,628,716

ULTRASONIC WELDING DEVICE WITH A SUCTION ROD FOR TREATING MICROSEMICONDUCTOR BLOCKS

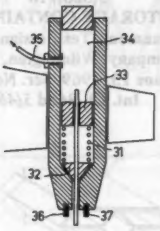
Joseph Jules Jacques Fastre, Evere Brussels, Belgium, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,812

Claims priority, application Netherlands, Feb. 16, 1968, 6802279

Int. Cl. B23k *1/06, 5/20*

U.S. Cl. 228—1 **8 Claims**



An ultrasonic welding device that includes a welding rod with an axial channel extending to the welding tip. A hollow needle is slidably supported within the channel so that one end extends beyond the end of the welding tip. When a force is exerted on the exposed end of the needle it is retracted into the channel. The other end of the needle is coupled to a suction pump or the like. The welding rod is movable relative to a work support and an ultrasonic generator vibrates the welding rod.

3,628,717

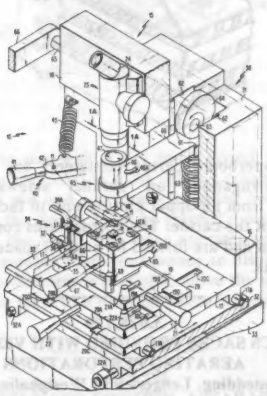
APPARATUS FOR POSITIONING AND BONDING

John R. Lynch, Fishkill; Leonard E. Otten, Poughkeepsie, and Herbert Wenskus, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,695

Int. Cl. B23k *1/00, 5/00*

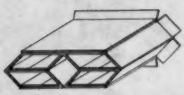
U.S. Cl. 228—6 **10 Claims**



This patent discloses a method and apparatus for aligning and joining a semiconductor chip to a substrate or carrier. The apparatus for first aligning and then bonding the chip to a substrate comprises a first system which includes first alignment means, immediately below the alignment means there being a substrate receiving means which is movable so as to permit alignment of the substrate in a predetermined position

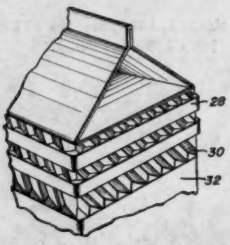
relative to the first alignment means. A second system cooperates with the first system and includes a vacuum-operated chip receiver. The first system is then moved until the chip is superimposed of the substrate and means are provided to press the chip into contact with the substrate. A heater located in the substrate receiving means heats the substrate and while the chip is being held against the substrate the substrate receiving means is rotated arcuately, the substrate bearing against the chip and causing a scrubbing action to inhibit the presence of voids in the bond interface.

3,628,718
STORAGE CONTAINER
Ben L. Broyles, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 13, 1969, Ser. No. 832,960
Int. Cl. B65d *5/48*
U.S. Cl. 229—15 **3 Claims**



A rectangular carton for storing packages of polymer, which carton is divided by intersecting partitions into four rectangular cells with each cell sized to hold snugly a single stack of such packages. The carton prevents bursting of the packages due to cold flow of the polymer during storage and shipping.

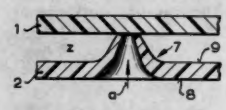
3,628,719
CARTON WITH HANDLING MEANS
Arthur W. Ford, Sr., P.O. Box 432, Felton, Calif.
Filed Jan. 15, 1970, Ser. No. 3,028
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 B **6 Claims**



Sealed, paperboard carton containers are provided with external corrugations on parallel sidewalls extending downwardly from an upper closure end to facilitate gripping or handling of the carton. The corrugations completely encircle the carton and are formed by parallel spaced indentations or projections.

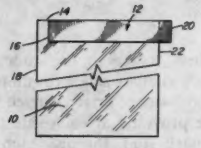
3,628,720
PLASTICS SACKS PROVIDED WITH VENTING OR AERATING PERFORATIONS
Herbert Schmedding, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed Nov. 12, 1969, Ser. No. 875,719
Claims priority, application Germany, Nov. 18, 1968, P 18 09 578.8
Int. Cl. B65d *37/00;* **B32h** *3/24*
U.S. Cl. 229—55 **12 Claims**

A bag having walls comprising at least two plies of plastic sheet material, each ply having perforations which are offset from the perforations in the other ply, said perforations each having the form of a tapered nozzle with its tapered end directed in the desired direction of air passages therethrough,



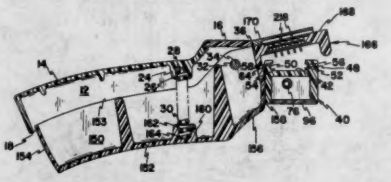
at least one of said plies resting on the tapered ends of the nozzles in the other ply, so as to provide a space between said two plies permitting the passage of air between the plies.

3,628,721
RECLOSEABLE PACKAGE MEMBER
Charles E. Palmer, Turnpike Road, Somers, Conn.
Filed Dec. 1, 1969, Ser. No. 881,088
Int. Cl. B65d *65/10*
U.S. Cl. 229—87 R **15 Claims**



A recloseable packaging member produced from a rectangular sheet of packaging material that has a strip of foil bonded adjacent one of its edges, and has two of the other edges bonded together to form a generally tubular configuration with the foil at one end. The foil and associated portions of the sheet of packaging material are folded inwardly and bonded together in overlapping relationship to provide an end wall that extends generally perpendicularly to the sidewall of the package. Reclosure of the end wall, once it has been opened, can be effected by folding the strip upon itself so as to interengage opposed portions of the package.

3,628,722
TRANSFERRING INFORMATION
Roger V. Larson, Murray, Utah, assignor to Bio-Logics, Inc., Salt Lake City, Utah
Filed Aug. 18, 1969, Ser. No. 850,774
Int. Cl. G06k *1/08*
U.S. Cl. 234—78 **6 Claims**



Method and apparatus for transferring encoded information from one or a first identification device to another or second identification device, the apparatus having relatively displaceable jaws actuated by oppositely extending handles, the lower jaw receiving and securely holding the first identification device in exposed relation to the upper jaw, and the upper jaw receiving and securely holding the second identification device, a plurality of punch pins being carried by and selectively displaceable relative to the upper jaw. The punch pins are biased toward the lower jaw so that the second identification device can be easily displaced into a device-

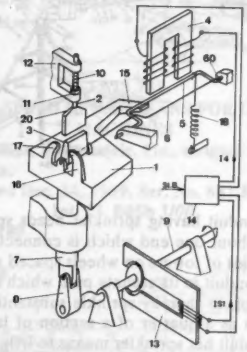
receiving chamber and releasably restrained in the chamber. When the jaws are forced together by squeezing of the handles, selected ones of the punch pins are displaced counter to the bias by engagement with code representations on the first identification device to perforate frangible sites in the second identification device.

3,628,723

OPERATING MEMBER SELECTION SYSTEM

Kurt Ehrat, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 21, 1969, Ser. No. 878,803
Claims priority, application Switzerland, Nov. 25, 1968, 17516/68
Int. Cl. G06k *1/05*
U.S. Cl. 234—115 **11 Claims**



In a system for selectively operating the punches of tape-punching devices, wherein a tappet is hingedly deflected by the armature of an electromagnet, the momentum of a reciprocating member carrying the tappet is used for presenting the armature to the core of the electromagnet and this, in combination with the storage of energy in a torsion member interconnecting the armature and the tappet, makes it possible to rely on minimal magnetic forces and hence to use relatively weak magnetic forces to achieve an optimum operating frequency of the tappet as well as maximum speed and precision without at the same time making stringent demands upon the accuracy of the timing periods of electromagnet energization and deenergization. The tappet is mounted on top of the reciprocable member and the latter has an extension which as it rises, engages the armature and raises it also, towards the core. A control unit energizes and deenergizes the electromagnet in synchronism with the operating cycle of the reciprocating member and the latter has two abutments defining first and second positions between which the tappet moves, a punch-operating member being displaceably mounted above the tappet in one of said positions. Preferably the armature is urged onto said extension by spring means and a lost motion coupling is provided between the spring means and the armature.

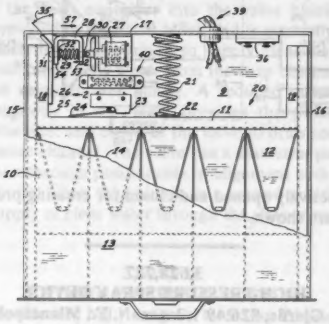
3,628,724

CASH-DRAWER-OPENING APPARATUS

Joseph R. Showers, Jr., Waldron, Ind., assignor to Indiana Cash Drawer Company, Shelbyville, Ind.

Filed Dec. 3, 1970, Ser. No. 94,777
Int. Cl. G07g *1/00*
U.S. Cl. 235—22 **5 Claims**

An apparatus for opening a cash drawer. A spring-loaded cash drawer is mounted in a housing having an electrically operated solenoid. The solenoid has a movable rod projecting through a flange fastened to the drawer. A magnetic reed relay is operable connected to the solenoid having a pair of contacts closable by a pulse circuit. A switch connected in parallel with the magnetic reed relay closes whenever the drawer is in the open position.

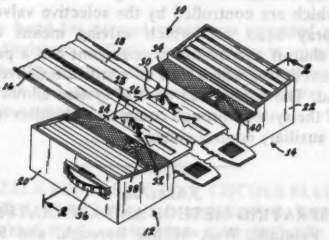


3,628,725

COMPACT TOY LAP COUNTER

Christopher J. C. Edwards, Glendale; Harvey W. La Branche, Verdes Peninsula, and George Soulakis, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 16, 1970, Ser. No. 3,356
Int. Cl. B61l *1/16*; A63f *9/14*
U.S. Cl. 235—99 R **7 Claims**



A device for use with a toy track layout to count the number of laps traversed by a toy vehicle, comprising a track section with a slot and a pivotally mounted lever which extends through the slot so it can be pivoted down by a vehicle moving along the track. The lever operates an escapement that allows a number wheel to advance to display a new lap count. A single-coil spring is used to move the number wheel and to urge the lever to a position where it projects from the track.

3,628,726

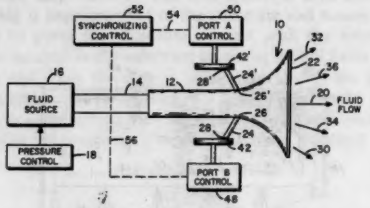
NOZZLE AND CONTROL APPARATUS

Gordon P. Johnson, St. Paul, and Le Roy E. Gerlach, Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,239
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 **6 Claims**

An improved fluidic nozzle and fluid-flow control apparatus is described. Control apparatus for altering the path

of fluid flow in the nozzle, including chambers capable of



being selectively opened and closed for creating pressure imbalances are shown.

3,628,727

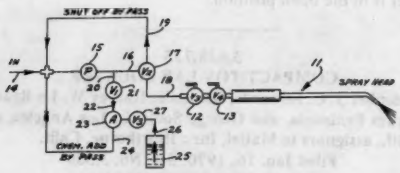
HIGH-PRESSURE SPRAY DEVICE

Harlan T. Gjerde, 826 49 1/2 Ave. N. E., Minneapolis, Minn.

Filed Dec. 22, 1969, Ser. No. 887,235

Int. Cl. B05b *9/00*

U.S. Cl. 239—124 **5 Claims**



A high-pressure spray device utilizing a pump delivering through a conduit to a remote spray head which spray head is provided with control means including on and off and controlled spray selections with valving means arranged in the conduit which are controlled by the selective valve controls at the spray head and which valving means include a complete shutoff and bypass arrangement and a partial flow arrangement during which time an additive is delivered to the spray head. The spray head control system allows complete control of the system through common hydraulics rather than requiring auxiliary control systems.

3,628,728

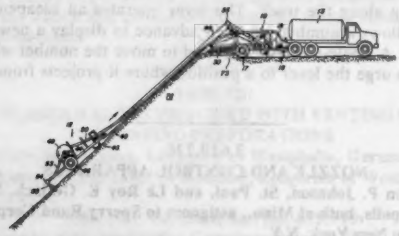
SPRAYING METHOD AND APPARATUS

Frank J. Polutnik, West Mifflin Borough, and Robert W. West, Baytown, both of Tex., assignors to United States Steel Corporation

Filed Apr. 23, 1970, Ser. No. 31,334

Int. Cl. B05b *9/02*

U.S. Cl. 239—159 **5 Claims**



A method and apparatus for spraying liquid on the slopes of large piles of bulk material, particularly for spraying dust-suppressing liquid on coal piles. Apparatus comprises a vehicle and a spray buggy, which can be carried on the vehicle. Vehicle is positioned at the top of a pile and includes a hoist for moving the buggy down and up the slopes. Buggy includes a hose, hose reel and spray bar with downwardly directed outlets. Hose is connected to tank truck supplying liquid.

3,628,729

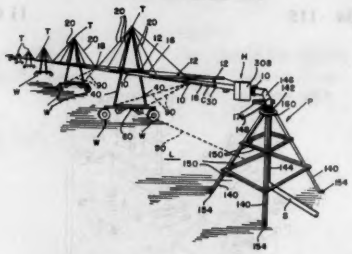
MOBILE IRRIGATION APPARATUS

John R. Thomas, Wichita, Kans., assignor to Livingston Irrigation & Chemical Co., Janesville, Iowa

Filed Apr. 17, 1969, Ser. No. 816,923

Int. Cl. B05b *3/00*

U.S. Cl. 239—177 **39 Claims**



A water conduit having sprinkler heads spaced along its length pivots about one end which is connected to a source of water. A series of towers on wheels spaced along its length supports the conduit in its arcuate path which may be 360° or any part thereof, to thereby sprinkle substantially all or part of a tract such as a quarter of a section of land. The other end of the conduit has sprinkler means to irrigate the corners of the field which otherwise would be outside of the circular sprinkling area. Power to the wheels of the towers and control of the system is provided by means including oil hydraulics. The hydraulic control system includes means to reverse power, position sensing means to shut off the system upon misalignment of towers beyond selected tolerances, and adjustable position sensing means to control feed of oil to drive the wheels depending on relative tower alignment (including pulleys and a capstan or other mechanical elements). The tower wheels can be pivoted to tandem position for moving the apparatus from location to location.

3,628,730

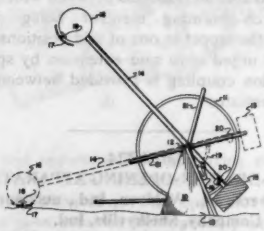
APPARATUS AND METHOD FOR IRRIGATION

Warren B. Nelson, Route #2, Meridian, Idaho

Filed Jan. 2, 1970, Ser. No. 79

Int. Cl. B05b *3/02*

U.S. Cl. 239—189 **17 Claims**



The present apparatus comprises a frame carrying an accumulating reel having a ratchet distally mounted about the periphery of the reel, a crank having a pawl engageable with the ratchet and means operable to reciprocally drive the crank to drive the reel in one direction. In the embodiments

specified the reel may accumulate flexible conduit thereon by moving over the conduit, or alternatively to accumulate conduit or cable upon the reel while the reel is stationary.

The method of irrigating tracts of land comprising the steps of

placing a mechanical sprinkler in a field to be irrigated, said sprinkler having a nozzle orifice operable to distribute water at a splash down rate below the predetermined rate of compaction of a selected soil;

supplying a volume of water under pressure through a conduit connected to a water source to said mechanical sprinkler at a rate equal to the predetermined field-absorption rate of a selected soil;

substantially continuously moving said sprinkler at a rate to apply a volume of water to the field below the predetermined field capacity of a selected soil;

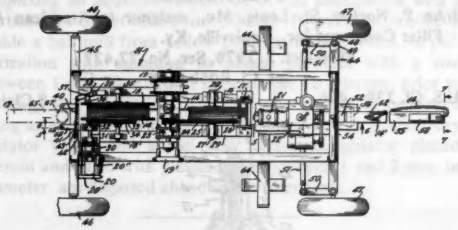
repeating the above steps at intervals equal to the change of predetermined reservoir capacity of a selected soil at the lowest terminal end of the root zone of crops in said field.

3,628,731

CONSTANT SPEED DRIVE MEANS FOR IRRIGATION MACHINES

William N. Phillips, Auburndale, Fla., assignor to LECO, Inc., Lakeland, Fla.

Filed Dec. 24, 1969, Ser. No. 887,866
Int. Cl. B05b *3/00*
U.S. Cl. 239—189 **1 Claim**



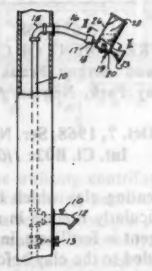
A self-propelled irrigation machine which receives and discharges water under pressure over an extended area, the machine carrying a driving winch and a cable one end of which is secured in place at a remote location and the other end caused to be wound about the winch resulting in the vehicle travelling in a straight line unattended a prescribed distance.

3,628,732

SOAP MIXER AND DISPENSER FOR SHOWER BATHS AND THE LIKE

Vincent Vicari, 8253 W. Maple, Norridge, Ill.

Filed Mar. 19, 1970, Ser. No. 21,117
Int. Cl. A62c *5/02*; B05b *7/26*
U.S. Cl. 239—310 **8 Claims**



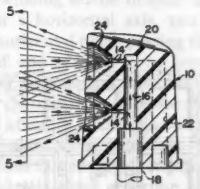
Soap-mixing-and-dispensing shower head in the form of a valve block having an inlet connected with a supply pipe for clear water and having an outlet having a spray-shower nozzle in communication therewith. The valve block has a soap container extending upwardly therefrom having a spray nozzle therein directed to spray water over a bar of soap in the soap container. and has a soap channel for soapy water leading from the soap container into the valve block. A slide valve is provided in the valve block and is manually movable along its axis into one position to supply clear water to the spray nozzle, and soapy water from the soap channel into the outlet and spray shower nozzle. A reduced cross-sectional area passageway in the valve provides the pressure drop between the inlet and outlet of the valve to draw soapy water from the soap channel. The valve has a diametral passageway leading therethrough positionable in alignment with said inlet and said outlet when the valve is in a second position, to effect the supply of clear water through the shower nozzle.

3,628,733

TWO-HOLE AEROSOL BUTTON

Rolf Kahn, Closter, N.J., assignor to 5 Day Division of Associated Products, Inc., Chicago, Ill.

Filed May 1, 1969, Ser. No. 821,051
Int. Cl. B05b *7/32*
U.S. Cl. 239—337 **4 Claims**



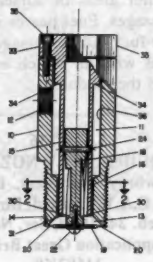
A spray head for aerosol containers provided with dual-parallel, discharge orifices connected to a common inlet passageway. Provision of the dual orifices produces a better spray pattern and lessens the tendency of the spray to diffuse into the atmosphere.

3,628,734

NOZZLE FOR DISPERSING VISCOUS FLUIDS

Courtney D. Lindell, Bellingham, and Hugh G. Locker, Ferndale, both of Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Mar. 11, 1970, Ser. No. 18,538
Int. Cl. B05b *7/10*
U.S. Cl. 239—403 **5 Claims**



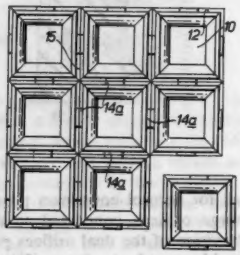
A low-pressure nozzle for atomizing and dispersing a viscous fluid comprising a housing having a chamber and a

diverging-wall mixing section. The chamber has inlets for the introduction of a dispersing fluid and an area of reduced cross section communicating with the mixing section. A conduit for the viscous fluid extends through the chamber to the diverging mixing section forming at the reduced cross section of the chamber a discharge outlet for the dispersing fluid. A spiral groove member is positioned in the conduit with one end of this member extending into the diverging mixing section with the grooves terminating in the mixing section by a reduction of depth of the grooves for deflecting outwardly fluid flowing in said grooves. A deflection plate is positioned in the mixing section to form an annulus between the edge of the deflection plate and the walls of the mixing section.

3,628,735
BURNER FOR USE WITH FLUID FUELS

Denis H. Desty, Weybridge, and David M. Whitehead, Camberley, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Jan. 22, 1970, Ser. No. 4,847
Claims priority, application Great Britain, Jan. 23, 1969, 3,793/69
Int. Cl. B05b 7/06
U.S. Cl. 239—425.5 **8 Claims**



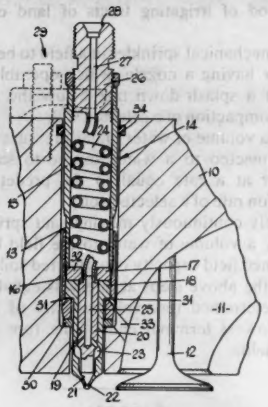
Burner for fluid fuels comprises a plurality of juxtaposed tubular modules each of which has external outlet surfaces at one end, external closure surfaces at the other end with a waist in between. At least some of the outlet surfaces have projections. The tubular modules cooperate so that the waists form a fuel chamber, adjacent closure surfaces mate to form fueltight joints, and the protruding areas of the outlet surfaces hold apart other areas of adjacent outlet surfaces to form fuel outlet passages. Fuel passes into the fuel chamber and thence via the fuel outlet passages to the combustion zone where it burns with air which enters the combustion zone via the bores of the modules.

3,628,736
LIQUID SUPPLY NOZZLES

Dorian Farrar Mowbray, Burnham, Buckinghamshire, England, assignor to C.A.V. Limited, Birmingham, England

Filed Feb. 24, 1970, Ser. No. 13,518
Claims priority, application Great Britain, Mar. 5, 1969, 11683/69
Int. Cl. B05b 1/32
U.S. Cl. 239—533 **4 Claims**

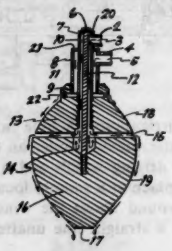
A liquid supply nozzle including a valve member which is movable by the action of fluid under pressure within a chamber to permit such fluid to flow through an outlet orifice, the valve member being resiliently loaded by means of a spring and the spring being formed from tube and serving to convey the fluid under pressure to the aforesaid chamber.



3,628,737
FUEL NOZZLE

John P. Norton, St. Louis, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 2, 1970, Ser. No. 77,427
Int. Cl. B05b 7/08
U.S. Cl. 239—426 **8 Claims**



An atomizing nozzle assembly wherein a plurality of fluids enter a first body portion of the assembly in separate conduits and discharge individually in a radially outward direction at openings disposed at selected points downstream of the first body portion. The design of the nozzle is of such a configuration that the discharging gases follow the contour of the outer periphery of a second and third body portion of said nozzle.

3,628,738
TREATMENT OF CLAYS

Dennis Mitchell, and Arthur Frank Payne, both of Park House, Courtenay Park, Newton Abbot, Devonshire, England

Filed Oct. 7, 1968, Ser. No. 765,294
Int. Cl. B02c 1/00
U.S. Cl. 241—16 **7 Claims**

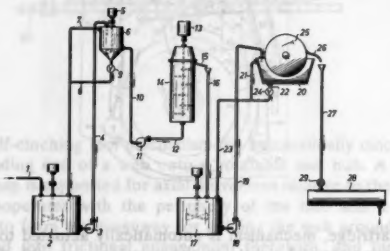
A method of treating clay which is to be dewatered and disintegrated, particularly for use in rubber compounds and as an anticaking agent in fertilizers, in which an organic coating substance is added to the clay before dewatering or, if the substance is of a kind which might decompose at the dewatering temperature, after dewatering, and the mixture of clay and the substance is reduced to a fine powder.

3,628,739

PROCESS FOR THE MANUFACTURE OF MOST FINELY PULVERIZED RED PHOSPHORUS

Fritz Muller, Knapsack near Cologne; Karl-Heinz Stendenbach, Bruhl-Pingsdorf; Franz-Josef Dany, Lechenich; Dieter Steidl, Sulzbach/Taunus; Horst Heinrich Weizenkorn, Efferen near Cologne, and Willi Forst, Knapsack near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Sept. 23, 1969, Ser. No. 860,275
Claims priority, application Germany, Oct. 3, 1968, P 18 00 870.3
Int. Cl. B02c *17/16, 21/00*
U.S. Cl. 241—17 2 Claims



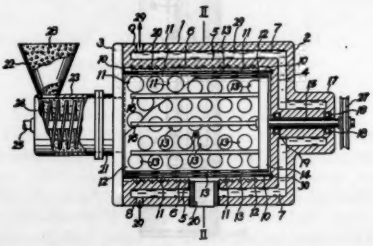
Production of most finely pulverized red phosphorus, by subjecting an aqueous suspension of red phosphorus with a particle size of between about 50 and 100 microns, produced inside a ball mill from yellow phosphorus and water, to pulverization with agitation to obtain particles with a size between 1 and 20 microns, for example 10 microns, prior to filtering the suspension. The red phosphorus is produced using an apparatus wherein a preliminary tank, a preliminary agitator vessel and a ball mill having an agitator placed therein and filled with glass balls of between 1 and 2 mm. in diameter, are disposed ahead of the filter tank.

3,628,740

CENTRIFUGAL POWDERING MACHINE

Kazuteru Tako, 29-11-203, 2-chome, Hasune, Itabashi-ku, Tokyo, and Hiroshi Gunji, 1327, Oto, Yono-shi Saitama, both of Japan

Filed Jan. 2, 1970, Ser. No. 227
Claims priority, application Japan, Jan. 22, 1969, 44/4588
Int. Cl. B02c *17/02, 13/282*
U.S. Cl. 241—152 A 1 Claim



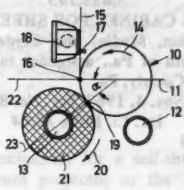
A powdering machine utilizing centrifugal force in which there is provided a jacket having percussion protrusions all over the surface of its barrel inner wall, a perforated cylindrical stationary screen inserted removably and fitted in the jacket and a perforated cylindrical rotary screen and beating bars both installed rotatably in the stationary screen so that if the objects to be powdered are deposited in the rotary screen they may be first beaten by the beating bars and then thrown against the percussion protrusions through the holes of the stationary screen by the centrifugal force of the rotary screen and pulverized into powder.

3,628,741

DEVICE FOR WINDING TEXTILE THREADS

Heinrich Enneking, Karlsruhe-Waldstadt, and Gunter Jahrig, Neureut, both of Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

Filed Aug. 22, 1969, Ser. No. 852,366
Claims priority, application Germany, Sept. 11, 1968, P 17 85 322.4
Int. Cl. B65h *54/20, 54/42*
U.S. Cl. 242—18 DD 2 Claims



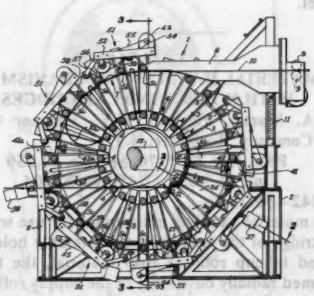
The device for winding textile threads is provided with a roll rotating about a horizontal axis, two bobbin supports disposed below a horizontal plane passing through the axis of rotation of said roll and adapted to be brought into and out of frictional driving engagement with the circumference of said roll, and a horizontally reciprocable thread guide disposed vertically above a surface line of said roll arranged in said horizontal plane. The thread to be wound moves downwardly from said thread guide, engages said roll at said surface line and extends along a portion of said roll until it reaches a point where one of the bobbin supports engages the roll. The thread is now wound on the bobbin support and when the bobbin is completed the thread is transferred to the second bobbin support which has been brought into engagement with the roll. While the second bobbin is wound, the first one is removed from its bobbin support.

3,628,742

DRIVE SYSTEM FOR STRIP ACCUMULATOR

Alfred O. Fritzsche, Hamilton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed July 8, 1970, Ser. No. 53,089
Int. Cl. B21c *49/00*; B65h *51/22*
U.S. Cl. 242—55 15 Claims



A drive system for roll cages in a strip accumulator of the type wherein the strip material is accumulated by being coiled into two substantially concentric sets of convolutions—an outer set and an inner set—connected by a free reverse loop which orbits between the sets of convolutions, the sets

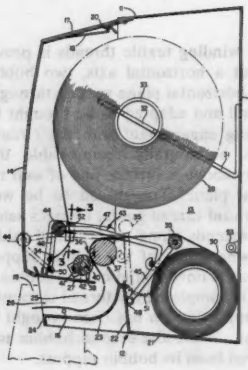
of convolutions being formed against expansible roll cages which support and guide the strip. The invention provides improved drive means for positioning the individual rolls making up the inner and outer roll cages, including sets of radially disposed coaxial drive shafts mounting the rollers for independent movement in opposite directions, the drive shafts for the rolls in the inner roll cage being operatively connected to a first ring gear drive means, with the drive shafts for the outer roll cages operatively connected to a second ring gear drive means, the drive system also including drivebelts associated with the rollers in the outer roll cage to implement the coiling of the strip, together with means for enclosing and protecting the coaxial drive shafts and their related mechanism.

3,628,743

DISPENSING CABINET FOR SHEET MATERIAL

Lehyman J. Bastian, Media, and Clyde W. Shuman, Jr., Philadelphia, both of Pa., assignors to Scott Paper Company, Delaware County, Pa.

Filed Nov. 4, 1969, Ser. No. 873,802
Int. Cl. B65h *19/04*
U.S. Cl. 242—55.3 **14 Claims**



A dispensing cabinet for sequentially dispensing sheet material from first and second rolls of spirally wound sheet material, incorporating a mechanism which monitors the diameter of a first roll of sheet material and, when the diameter decreases to a predetermined level representative of the sheet material remaining from a second roll. The arrangement of components in the cabinet enables the rolls to be unwound in either direction without affecting the operation of the cabinet.

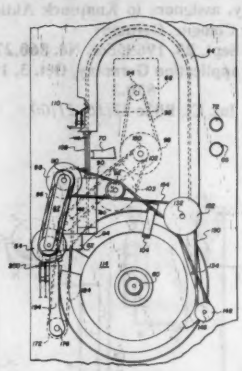
3,628,744

STRIP MATERIAL HANDLING MECHANISM FOR USE WITH NONREWIND CARTRIDGES

William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 22, 1970, Ser. No. 57,250
Int. Cl. B65h *17/48*; G03b *1/04*
U.S. Cl. 242—55.21 **11 Claims**

A strip material handling mechanism for use with a nonrewind cartridge of the type having a rotatable holder for both supply and takeup rolls of strip material, the takeup rolls being formed radially outwardly of the supply roll in inwardly directed convolutions as additional strip material is advanced into the cartridge. The strip material handling mechanism includes cartridge receiving and locating members to align the cartridge in proper orientation with one end of a channel formed in a guide member. Upon actuation of the mechanism, a drive member enters the cartridge to engage the leading end of the strip material, to extract the leading end from the cartridge, and to advance the strip material into the channel in the guide member. Presence of the strip material in the channel actuates a cam mechanism to axially move the cartridge and to position a feeder arm to guide the strip material back into the cartridge, thereby forming a takeup roll. As the trailing end of the strip material reenters



the cartridge, mechanism is automatically actuated to cinch the strip material tightly in the cartridge rotatable holder, reforming tee supply roll, and to reposition the parts of the strip material handling mechanism to their original orientations ready to be reactuated with the same or another cartridge.

3,628,745

WINDING SHAFT FOR ROLL-CUTTING MACHINES

Klaus Taeffner, Cologne, and Hermann Lubrig, Leverkusen, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 26, 1969, Ser. No. 880,087
Claims priority, application Germany, Dec. 23, 1968, P 18 16 550.9
Int. Cl. B65h *19/04*
U.S. Cl. 242—56.9 **4 Claims**

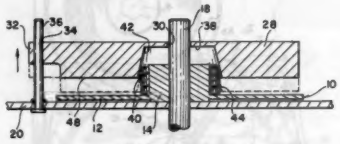
In the winding shaft for roll-cutting machines are provided stops which are pivotal about pivots in a longitudinal groove. The stops have a rest position in which they are disposed inside the longitudinal groove. Additionally they are adapted to pivot into an operating position in which they are perpendicular to the winding shaft axis. An object of this invention is to provide a winding shaft on which winding tubes can be so positioned that they are in exact alignment with separate webs or strips produced in the roll-cutting machine.

3,628,746

SELF-CINCHING REEL MECHANISM

Alphonse B. Di Francesco, and Elmer E. Boase, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1970, Ser. No. 43,526
Int. Cl. B65h 75/28
U.S. Cl. 242—74 16 Claims



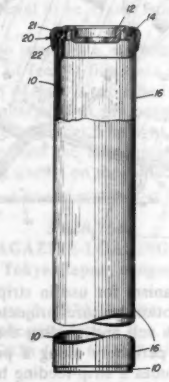
A self-cinching reel mechanism for automatically cinching the leading end of a web onto a rotatable reel hub. A film guide cap is supported for axial movement relative to the hub and cooperates with the periphery of the hub and a reel flange to form a passageway for guiding the web around the hub and into frictional engagement therewith, and further cooperates with the reel flange to retain the web convolutions as they accumulate. After the leading end of the web is cinched onto the hub, the web guide cap is axially moved out of the path of the web by the web convolutions as they accumulate on the hub.

3,628,747

PIRN CAP

David Bakewell, Mobile, Ala., assignor to Courtaulds North America, Inc., Mobile, Ala.

Filed Dec. 2, 1969, Ser. No. 881,453
Int. Cl. B65h 75/10
U.S. Cl. 242—118.32 1 Claim



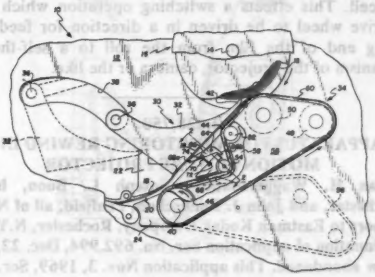
A textile pirn upon which filamentary material is supplied is provided with a replaceable end covering ring to prevent damage to the nose end of the pirn, to cover previous damage, and to aid in the runoff of the filament over the nose end.

3,628,748

FILM-FEEDING MECHANISM

Donald O. Easterly, and Daniel J. Stark, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1970, Ser. No. 22,181
Int. Cl. G11b 15/32, 15/66
U.S. Cl. 242—192 6 Claims



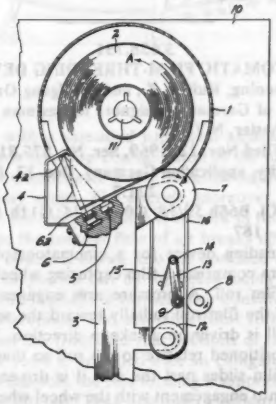
A film-feeding mechanism for a self-threading cartridge loading motion picture projector or the like comprises a stripping finger engageable with a roll of film in a cartridge for deflecting the film from the cartridge for travel along an edge of the finger. A drivebelt is engageable with the roll adjacent to the finger for driving the roll in an unwinding direction during film-stripping operations. Means are provided for urging the film stripped from the roll into positive engagement with the finger along its guide surface to prevent twisting of the film as it is fed from the roll and thereby avoid film threading failures that might otherwise occur by an automatic film threading device of the projector being unable to accept twisted film delivered to such device by the film-feeding mechanism.

3,628,749

AUTOMATIC FILM THREADING DEVICE

Wolfgang Ort, Bad Cannstatt, and Gerhard Brauning, Ruit, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,813
Claims priority, application Germany, Dec. 12, 1968, P 18 14 222.8
Int. Cl. G11b 15/66, 15/26
U.S. Cl. 242—186 5 Claims



A film-threading device for a cinematographic projector and/or camera comprises a friction or drive wheel adapted to

be placed in engagement with the outer convolution of a roll of film or the like. The film roll may be positioned within a cartridge on a projector and/or camera or the film roll may be unenclosed. A pressure bar is also movable into engagement with the film roll. The bar has a mirror surface. A light source directs a light beam against the mirror surface and then to a photocell. In operation the film roll is first rotated in a takeup direction and, as the leading end of the film passes the pressure bar, it breaks the light beam to the photocell. This effects a switching operation which causes the drive wheel to be driven in a direction for feeding the leading end of the film from the roll to a self-threading mechanism of the projector, camera or the like.

3,628,750

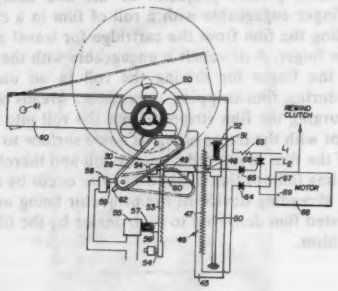
APPARATUS FOR MONITORING REWIND IN A MOTION PICTURE PROJECTOR

Herman H. Waggershauser; Joseph L. Boon, both of Rochester, and John J. Bundschuh, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 692,994, Dec. 22, 1967, now abandoned. This application Nov. 3, 1969, Ser. No. 873,478

Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*

U.S. Cl. 242—186 **8 Claims**



A cartridge-loading motion picture projector is provided with a movable arm for supporting a reel within a cartridge which in turn is supported on the projector. The arm is arranged to assume an angular position dependent on the size of the cartridge. Means are provided for sensing a code indication on the cartridge and means are provided for sensing the amount of film wound on the reel within the cartridge. A comparing means is responsive to the variables sensed by the two sensing means for adjusting the rotational speed of the supply reel during rewind.

3,628,751

AUTOMATIC FILM-THREADING DEVICE

Gerhard Brauning, Ruit A. F., and Wolfgang Ort, Bad Cannstatt, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

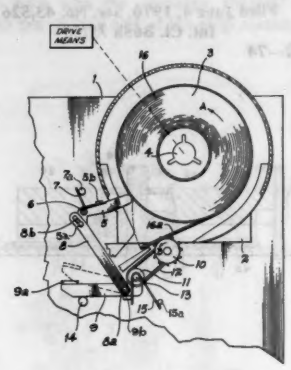
Filed Nov. 12, 1969, Ser. No. 875,819

Claims priority, application Germany, Dec. 12, 1968, P 18 14 221.7

Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*

U.S. Cl. 242—187 **8 Claims**

A film-threading device for a cinematographic projector and/or camera comprises a film capturing wheel positionable adjacent a film roll. A pressure arm engages and urges a loose end of the film roll radially toward the axis of the roll while the roll is driven in a takeup direction. The arm and wheel are positioned relative to the roll so that as the loose end of the film slides past the arm it is driven radially outwardly and into engagement with the wheel whereby teeth on the wheel engage the loose end of the film through one of the perforations in the film while the film is still traveling in a takeup direction. The wheel is driven in a direction which causes the loose end of the film to move in an unwinding direction for feeding the film end into self threading portions



of a cinematographic motion picture projector, camera or the like.

3,628,752

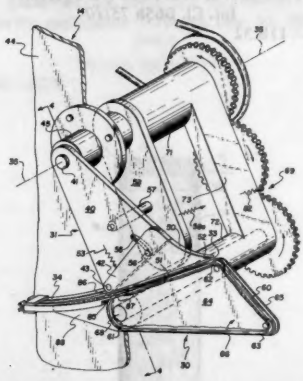
DEVICE FOR STRIPPING AND FEEDING STRIP MATERIAL FROM A ROLL

Evan A. Edwards, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,424

Int. Cl. G11b *15/32*, *15/66*

U.S. Cl. 242—192 **10 Claims**

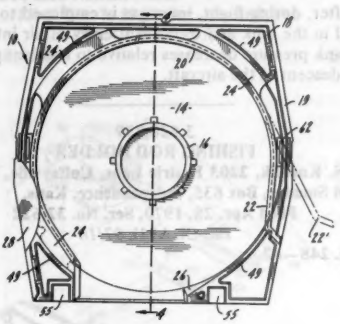


A stripping mechanism for use in strip material handling devices, such as motion picture projectors, for unwinding strip material from a roll and guiding the unwound portion away from the roll periphery along a predetermined path. The mechanism includes a strip-feeding belt for rotating the roll in an unwinding direction and a stripper finger for deflecting the leading edge of the strip material away from the roll periphery and into a strip guiding channel formed by opposing substantially parallel surfaces of the drive belt and stripping finger. Both the drivebelt and stripper finger are mounted for pivotal movement about a common axis, thereby permitting the surfaces forming the strip-guiding channel to maintain a fixed relationship as the mechanism pivots into engagement with rolls of various diameters.

3,628,753
FILM CARTRIDGE

Gordon E. Bradt, Wilmette; Richard Frystak, Park Ridge; Nicholas Mischenko, Chicago, and Edward R. Prelletz, Chicago, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 21, 1969, Ser. No. 826,045
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—197 35 Claims



A cartridge for a strip of flexible material, preferably film, adapted for use with a projector having automatic feed-out means, basically comprising a reel receptacle and a cover. The receptacle has a flat back portion and a circular reel spacer ridge on the back portion. An arcuate guide member is spaced from the back portion and positioned to penetrate the space between the flanges of a reel in the receptacle along an upper portion of the reel. The cover fits over the receptacle to substantially enclose a reel, and has an internal reel spacer ridge and a central, internal reel-bearing projection located to penetrate the central opening in the hub of a reel positioned in the receptacle. The receptacle and cover are constructed and arranged to form a threading aperture on the bottom end of the assembled cartridge to permit a strip of flexible material to be drawn from the reel out of the cartridge.

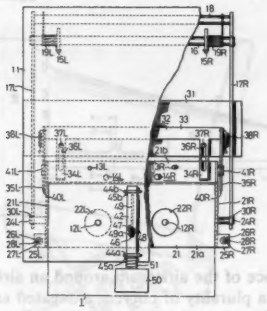
The invention also provides a method and means for estimating the number of feet of film on a reel. In carrying out the method, a beam of light is projected between the flanges of the reel in a manner so that the beam is at least partially masked by the film on the reel. The light beam is collected as a collection surface, and the amount of film on the reel is estimated by reading a scale on the collection surface.

3,628,754
TAPE MAGAZINE-LOADING DEVICE

Sukeyosi Fujikawa, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Apr. 9, 1970, Ser. No. 27,044
Claims priority, application Japan, Apr. 14, 1969, 44/28486
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—198 4 Claims

A tape magazine-loading device, wherein a holder is rotatably attached to the free ends of left and right rotary arms, and it is normally maintained horizontal at a position spaced apart from the tape magazine-loading portion. Insertion of the tape magazine into the holder from the front will cause the left and right rotary arms to be rotated so that the tape magazine is automatically moved toward the loading portion to be loaded therein while being held in the holder. By operating the return lever with the tape magazine being loaded in the loading portion, the holder will be depressed so as to be automatically returned to the horizontal position,



and the tape magazine will automatically be pushed out of the holder.

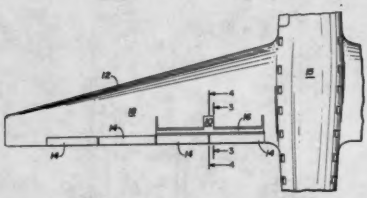
3,628,755
HELICOPTER WITH SHROUDED ROTOR AND AIRSCOOP CONFINED WITHIN TEARDROP CONFIGURATION OF THE FUSELAGE

Bruno Nagler, New York, N.Y., assignor to Verti-Dynamics, New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,420
Int. Cl. B64c *27/22*
U.S. Cl. 244—17.21 12 Claims

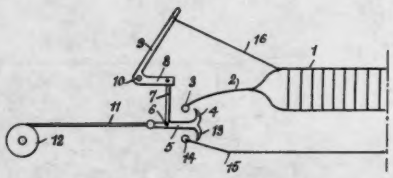
An aircraft with a shrouded rotor and airscoop confined within the classic teardrop configuration of the fuselage. The aircraft may be a helicopter and is therefore additionally provided with rotary wings. The aircraft, moreover, has an airscoop channel, the entry of which is located in the fuselage at the place where the laminar flow of air breaks up into turbulent air. Thus, the air is drawn into the confined air channel, and propelled or pushed out by the rotor facing the rear of the fuselage. The fuselage is furthermore constituted of two interconnected sections. The shrouded rotor forms the connection between the front and rear sections of the fuselage. In addition, the rotor is provided with an elongated hub having spaced ribs thereon, the ribs forming a support for the tail structure of the aircraft. Thus, the outer configuration of the fuselage is maintained and, at the same time, a shrouded rotor is provided which functions effectively due to the location of the airscoop.

3,628,756
AIRFOIL MEMBER
Richard M. Johnson, Dallas, Tex., assignor to LTV Electrosystems, Inc., Greenville, Tex.
Filed Mar. 5, 1970, Ser. No. 16,866
Int. Cl. B64c 9/14
U.S. Cl. 244—42 C 14 Claims



A disturbance of the airstream around an airfoil is created by extending a plurality of curved, elongated segments from a stacked position into the airstream. When in a stacked position, the curved segments present a contour that matches that of the airfoil to which they are pivoted. Each of the individual segments is restrained from being extended from a stacked position until the preceding segment has nearly reached its fully extended position. The curvature and pivot location of each segment is such that the force produced by an airflow impinging thereon will tend to move the segment into an extended position.

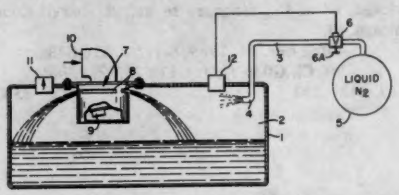
3,628,757
DEVICE FOR THE ARRESTING OF AIRCRAFT BY EITHER A NET OR A CABLE
Sixten E. Carlsson, Braviksvagen 35, Norrkoping, Sweden
Filed Jan. 19, 1970, Ser. No. 3,766
Int. Cl. B64f 1/02
U.S. Cl. 244—110 C 3 Claims



An arresting device for aircraft consisting in a net and an arresting cable to be selectively stretched across a runway to intercept a landing aircraft, and to means by which either the cable or the net may be raised to aircraft-arresting position and also coupled to brakes that provide energy absorption to either the net or the cable. The operative position of either the net or the cable and the coupling of either of them to the brakes is selectively obtained by means of the raising or elevation of masts to which the net is connected.

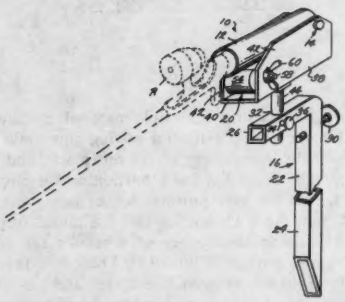
3,628,758
FUEL TANK INERTING SYSTEM
Richard A. Nichols, Santa Monica, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed July 22, 1969, Ser. No. 843,667
Int. Cl. B64d 37/18
U.S. Cl. 244—135 7 Claims

An inerting system to prevent fire and explosion within an aircraft fuel tank by maintaining in the vapor space thereof an oxygen concentration which is insufficient to support combustion. This low oxygen concentration (10 percent by volume or less) is accomplished by spraying or cascading fuel into the vapor space of the fuel tank during the fueling operation, said vapor space being filled with inert gas such as nitrogen thereby decreasing the oxygen content of the fuel.



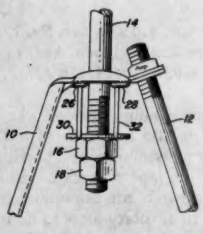
Thereafter, during flight, inert gas is employed to pressurize the fuel in the tank and to prevent entry of air into the tank when tank pressure decreases relative to ambient pressure as during descent of the aircraft.

3,628,759
FISHING ROD HOLDER
Omar S. Knedlik, 2203 Prairie Lane, Coffeyville, Kans., and Virgil Stouder, Box 635, Independence, Kans.
Filed Apr. 28, 1970, Ser. No. 32,622
Int. Cl. A01k 97/10
U.S. Cl. 248—42 1 Claim



A tubular fishing rod holder is pivotally secured near its rear to a base for pivotal movement about a horizontal axis. The fore end of the holder is propped up by resting on an eccentric cam which may be rotated about a horizontal axis and fixed to determine the normal angle of inclination of the holder. The holder is of greater diameter than the fishing rod handle to be received so the latter cocks in the former to enhance securement.

3,628,760
HANGER FOR SUPPORTING INSULATED PIPE
Robert D. Kindorf, 448 Scenic Ave., Piedmont, and David O. Kindorf, 6257 Girvin Drive, Oakland, both of Calif.
Filed Jan. 12, 1970, Ser. No. 2,129
Int. Cl. F16l 3/18
U.S. Cl. 248—59 7 Claims



A hanger for insulated pipe with a device for temporarily holding the pipe at its proper elevation and grade prior to the

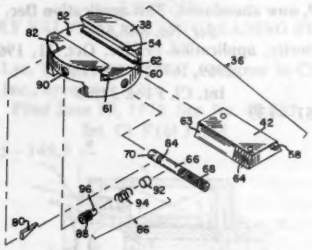
application of insulation and used in conjunction with a special connection between the hanger and a hanger rod by which it is suspended, which connection enables the hanger rod to swing upon expansion of the pipe with the hanger remaining in its normal vertical position without damaging the insulation.

3,628,761

GONIOMETER HEAD FOR X-RAY DIFFRACTION APPARATUS WITH IMPROVED X- OR Y-MOTION MECHANISM

Roy L. Thomas, Jr., Medway, Mass., assignor to Charles Supper Co., Inc., Natick, Mass.

Filed Oct. 1, 1969, Ser. No. 862,896
Int. Cl. F16m *11/12*
U.S. Cl. 248—184 **3 Claims**



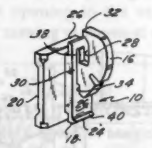
A goniometer head for securing and positioning a crystal specimen in X-ray diffraction apparatus—more particularly, an X- or Y-motion mechanism comprising a frame defining a channel within which is received a dovetailed carriage side-driven by a manually rotatable screw disposed parallel to and contiguous with the carriage. A carriage loading structure biases the screw transversely against the carriage and also functions to lock the carriage in the channel.

3,628,762

MOUNTING HOOK

Donald F. Williams, Somerville, and Gerald H. Cox, Flemington, both of N.J., assignors to Fedders Corporation, Edison, N.J.

Continuation-in-part of application Ser. No. 865,611, Oct. 13, 1969, now abandoned. This application June 19, 1970, Ser. No. 47,772
Int. Cl. A47g *29/02*
U.S. Cl. 248—235 **10 Claims**



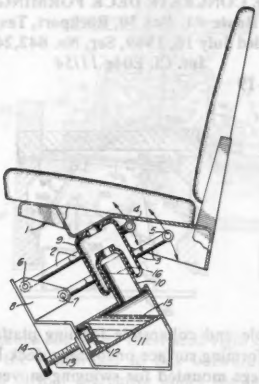
An improved hook for mounting a structure to a relatively thin wall is provided. The hook comprises a base member having an inner surface adapted to be coupled to the structure to be mounted and a generally flat outer surface. An elongated arcuate member is coupled to the outer surface of the base and extends outwardly and upwardly therefrom beyond the top edge of the base. A plurality of slots and ridges are provided on the base outer surface and arcuate member which cooperate with suitable cutouts in the associated wall in securing the hook to the wall.

3,628,763

AIR-SPRUNG SEAT FOR VEHICLES

Adolf Auer, Munich, Germany, assignor to Bremshey Aktiengesellschaft, Solingen, Germany

Filed Apr. 21, 1969, Ser. No. 817,676
Int. Cl. A47c *3/30*
U.S. Cl. 248—400 **5 Claims**



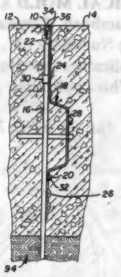
A novel air-sprung vehicle seat, characterized by a piston arranged in slidable form in the air spring piston or in an auxiliary chamber, for altering the volume of air in the air spring, and therewith the inherent frequency of the seat.

3,628,764

CONCRETE FORM

Duane C. Burton, 145 Mohawk Drive, Boulder, Colo.

Filed Oct. 31, 1968, Ser. No. 772,185
Int. Cl. E01c *11/08*
U.S. Cl. 249—9 **12 Claims**



A concrete form used in forming a contraction joint between adjacent concrete slabs and a sheet member therefor. The concrete form comprises a plurality of aligned stakes and an elongated relatively rigid sheet member. Each of the stakes includes a ledge means. The sheet member has upper and lower longitudinally extending, generally planar portions and a longitudinally extending key deformation portion interposed between and connected to said planar portions. The sheet member has a plurality of longitudinally spaced strap means formed within one of the planar portions. Each of the strap means is disposed at least in partial encompassing engagement around a portion of a corresponding one of the stakes. The sheet member also includes a ledge engaging means for engaging the ledge means of the stake. The sheet member also has one of the planar portions, prior to installation upon the stakes, convergently disposed toward the

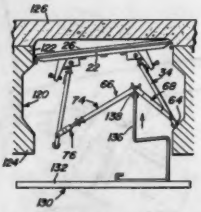
other planar portion, taken in a direction preceding from the stakes to the key deformation portion. The strap means, ledge means, ledge-engaging means and planar portions cooperate to hold said member against said stakes to prevent vertical movement of the member relative to the stakes.

3,628,765

ADJUSTABLE CONCRETE DECK FORMING PLATFORM

Jack Sanders, Route #1, Box 30, Rockport, Tex.

Filed July 16, 1969, Ser. No. 842,246
Int. Cl. E04g *11/54*
U.S. Cl. 249—19 **20 Claims**



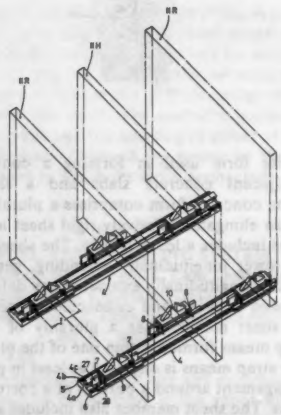
An adjustable and collapsible forming platform including an elongated forming surface or forming deck having at least two pairs of legs mounted for swinging movement between an inwardly moved collapsed position and an outwardly moved girder-engaged platform-orientating position. The legs of each pair are interconnected by a collapsible spreader bar which locks the legs open. In addition, each of the legs is longitudinally adjustable, as are the spreader bars, so as to vary and adjust the final orientation of the forming deck itself. A wrecking platform is also incorporated in the invention and operates so as to automatically collapse and remove the forming platform subsequent to the formation of the concrete deck through an engagement with the spreader bars in a manner so as to cause a folding thereof and the legs therewith, the forming platform collapsing and dropping out to the wrecking platform.

3,628,766

VERTICAL MOLD ASSEMBLY

Klaus Hartmann, Hamburg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Augsburg, Germany

Continuation of application Ser. No. 863,728, June 2, 1969, now abandoned. This application July 23, 1969, Ser. No. 844,076
Int. Cl. B28b *7/26*
U.S. Cl. 249—129 **10 Claims**



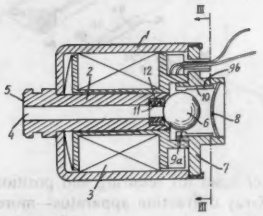
The present invention provides an assembly of vertical slab-casting molds in which each of a plurality of vertical molds in said assembly may be removed therefrom. The vertical molds are positioned over at least two sets of rails. Each of said molds is moved on at least two wheel assemblies. One of said wheel assemblies is on one set of rails and the other wheel assembly is on the other set of rails. Each set of rails contains at least two parallel tracks. Each wheel assembly moves on one track and the wheel assemblies of adjacent molds are positioned on adjacent tracks forming a staggered relationship relative to each other. Each wheel assembly moves on one track and is sufficiently low so that it may move under the vertical molds.

3,628,767

ELECTROMAGNET BALL VALVES

Claude Lombard, Billancourt, France, assignor to Regie Nationale Des Usines, Renault Billancourt (Hauts de Seine), France and Automobiles Peugeot, Paris, France

Continuation-in-part of application Ser. No. 862,295, Sept. 30, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,509
Claims priority, application France, Oct. 11, 1968, Mar. 18, 1969, 169721; 6907781
Int. Cl. F16k *31/06*
U.S. Cl. 251—139 **7 Claims**



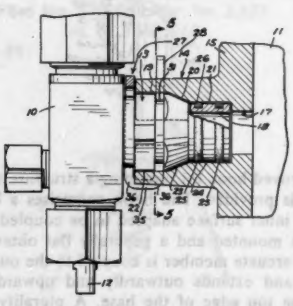
Electromagnetic valve comprising a ball valve adapted to coact by magnetic attraction with the core of an electromagnet forming a passage for the fluid to be controlled and comprising a valve seat formed at the end of said passage, characterized in that said seat consists of an inner conduit of flexible material and of a rigid outer collar adapted to be secured to said core, said inner conduit being retained in said collar on the ball side by the engagement of registering shoulders, and adapted to undergo a certain elastic distortion when said ball is attracted to its seated position.

3,628,768

QUICK CONNECTING COUPLING

Richard Stuart Hutt, Adrian, Mich., assignor to Primore Sales, Inc., Adrian, Mich.

Filed Oct. 16, 1970, Ser. No. 81,455
Int. Cl. F16l *37/28*
U.S. Cl. 251—148 **13 Claims**



A quick connecting coupling comprising a first member having an opening therethrough providing a fluid passage.

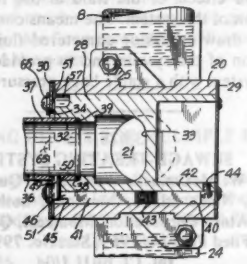
The first member has a noncircular recess at one end of said opening. A second member having a projection with a noncircular external configuration extends into the recess of the first member and sealing means are provided between the first member and said projection of the second member. The first member has spaced peripheral grooves a portion of which communicate with the opening therethrough. The second member has an annular peripheral groove therein aligned with the spaced peripheral grooves and a retaining ring having spaced legs is positioned in said spaced grooves of said first member and has portions thereof extending into said peripheral groove of the second member. The retaining ring has an encircling portion surrounding the projection and interposed between the first member and the second member. The retaining ring includes connecting portions extending from the ends of said encircling portion to the ends of the legs respectively.

3,628,769

ROTARY VALVED VACUUM CLEANING SYSTEM OUTLET

Wilfred J. Lee, East Syracuse, N.Y., assignor to Clarkson Industries, Inc., Syracuse, N.Y.

Filed June 19, 1970, Ser. No. 47,837
Int. Cl. F16l *37/28*
U.S. Cl. 251—149.9 **9 Claims**



The disclosure is directed to improvements in the outlets of a built-in vacuum system to which a cleaning hose may be detachably connected. Each outlet has a rotatable valve plug to eliminate air noise, which is provided with a sliding key that interlocks with the exposed end wall of the valve housing and a key actuator on the hose nipple which releases the valve plug for turning only when the hose nipple is seated in the outlet. The improved construction permits the valve plug to be removed from the exposed side of the valve housing for repair or replacement, and also permits adjustment of the end wall of the housing relative to the valve plug and insures alignment of the key and port opening in the valve plug with the keyhole and port opening in the valve housing, respectively, at the end of a turning movement of the valve plug.

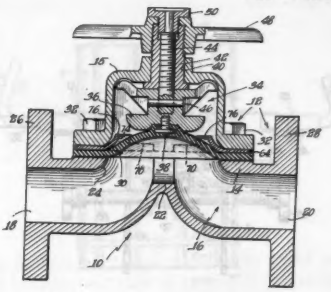
3,628,770

DIAPHRAGM VALVE CONSTRUCTION

Thomas E. Rost, Crystal Lake, Ill., assignor to Hills-McCanna Company, Carpentersville, Ill.

Filed May 4, 1970, Ser. No. 34,107
Int. Cl. F16k *7/16*
U.S. Cl. 251—331 **4 Claims**

A diaphragm valve of the general type defined by a valve body having an internal through passage intersected by a weir with a control opening positioned directly above said weir, and a bonnet attached to said body in surrounding relation to said weir with a reciprocal actuator member carried by said bonnet and connected with a flexible diaphragm mounted in overlying relation to said opening. The valve further includes a plate member disposed intermediate said diaphragm and said bonnet, and having a central opening defined by a rigid, outwardly flared edge configuration which provides at least one outwardly facing shoulder. Abutment means cooperable with said shoulder are provided on the actuator, such that upon engagement thereof, inward movement of said actuator precludes overcompression of the



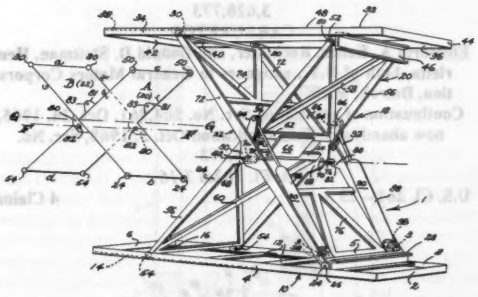
diaphragm against the weir. The flared rigid edge configuration permits the diaphragm to flex outwardly to the open condition and further thereafter under the influence of line pressure without the danger of said diaphragm engaging sharp corners, or the like, capable of damaging same.

3,628,771

SCISSORS-TYPE LIFTING LINKAGE ELEVATOR

Haakon G. Egeland, 7 Seabrook Lane, Stoneybrook, N.Y., and John Dioguardi, 16 Sandy Court, Port Washington, N.Y.

Continuation-in-part of application Ser. No. 646,393, June 15, 1967, now abandoned. This application July 28, 1969, Ser. No. 20,443
Int. Cl. B66f *3/22*; B66b *11/04*
U.S. Cl. 254—122 **5 Claims**



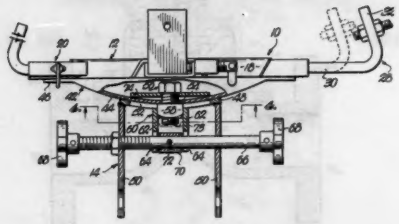
An elevator, for example, a commercial aircraft cargo loading elevator, utilizing a scissors-type lifting linkage, wherein the variation of the lifting force required by the lifting actuator means is minimized during the entire lifting cycle by utilizing scissors-type linkage pivot means offset below the planes formed by the two frames and attaching the lifting means above the plane of one of said frames. The use of such offset center pivot means in combination with said scissors-type linkage permits a scissors linkage geometry with minimum variation in lifting actuator force during the entire lifting cycle, and with such a structure a controlled platform translation in the direction transverse to the lifting direction is accomplished.

3,628,772

LOAD-CARRYING AND POSITIONING HEAD

Gilbert W. Gaarder, and Elmont E. Hollingsworth, both of Saint Joseph, Mo., assignors to Gray Manufacturing Company, Inc., Saint Joseph, Mo.

Filed May 1, 1969, Ser. No. 828,071
Int. Cl. B66f 3/00
U.S. Cl. 254—134 4 Claims



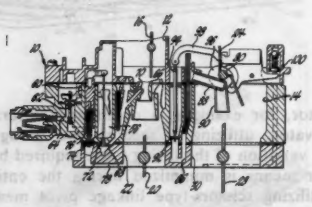
A load-carrying and positioning head for use in connection with jacks for handling vehicle transmissions or similar load lifting and handling devices, the head having a platform upon which the load rests, there being a plurality of arms carried by the platform and shiftable with respect thereto and into clamping engagement with the load when it is on the platform, there being chains cooperable with the platform for retaining the load thereon when the platform is tilted. The platform is carried by a mount which is coupled to the jack or the like, and is shiftable into plurality positions, there being a vertical axis coupling the mount and the platform whereby the platform may be rotated about a vertical axis with respect to the mount; there being a leveling link coupled with the mount, the mount having a transverse axis whereby the platform may be rotated about a horizontal axis; and there being a plate having a spherical surface carried by the platform and mating with a dished member, there being means for shifting the plate whereby the platform may be tilted from side to side.

3,628,773

CARBURETOR

Ellsworth A. Kehoe, Rochester, and Donald D. Stoltman, Henrietta, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 504,961, Oct. 24, 1965, now abandoned. This application Oct. 3, 1968, Ser. No. 784,973
Int. Cl. F02m 7/16
U.S. Cl. 261—23 A 4 Claims



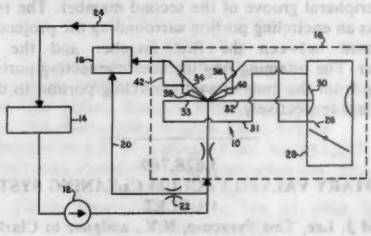
A four barrel, multiple stage carburetor has a pair of small plain tube primary mixture conduits transversely spaced on opposite sides of a small, centrally located fuel bowl and a pair of large air valve secondary mixture conduits transversely spaced across the rear of the fuel bowl.

3,628,774

FLUIDIC FLUID-METERING SYSTEM

Janusz S. Sulich, Sothfield, Mich., assignor to The Bendix Corporation

Original application Sept. 15, 1969, Ser. No. 858,021. Divided and this application Mar. 17, 1971, Ser. No. 125,096
Int. Cl. F02m 7/10
U.S. Cl. 261—36 A 2 Claims



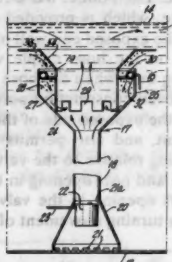
In a fluidic fluid-metering system having a return line, a means is provided of reducing or completely eliminating the back pressure effects of the fluid in the return line of the fluidic portion of the system. The means comprise a jet pump operative to draw excess or unmetered fluid away from the fluidic portion of the system and to provide the fluidic portion of the system with a stable back pressure.

3,628,775

SEWAGE-TREATING SYSTEM

Christopher W. McConnell, Westmount, Quebec, and Robert W. Slater, Nun's Island, Montreal, both of Canada, assignors to Atara Corporation, Montreal, Quebec, Canada

Filed Feb. 14, 1969, Ser. No. 799,434
Int. Cl. B01f 3/04
U.S. Cl. 261—77 10 Claims



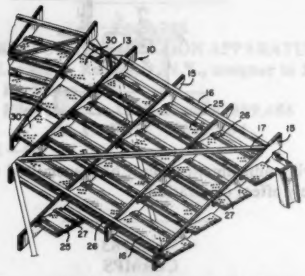
A sewage digestion system includes a liquid-submerged vertical stack with top discharge and bottom inlet openings and an upper selection of larger cross section than the lower section and provided with peripherally spaced inlet ports. A generator for bubbles preferably of approximately the cross section of the stack lower section registers with the inlet opening. A torus pipe connected to a low-pressure blower surrounds the stack above the inlet ports and an annular wall surrounds the pipe and extends to the stack below the ports, the pipe being between 1 foot and 3 feet below the liquid level. In the alternative the torus is at about the level of the stack discharge opening and the inlet ports are omitted.

3,628,776

COOLING TOWER FILL ASSEMBLY

LeRoy J. Raseley, Saylorsburg, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,680
Int. Cl. B01f 3/04
U.S. Cl. 261—113 10 Claims



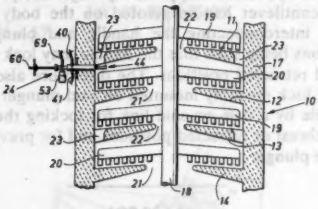
A fill assembly for a cooling tower which includes a plurality of parallel, spaced-apart, superimposed support members on which are mounted a plurality of trays. The support members are at an angle but each of the trays are mounted so that they are generally horizontal. The trays are provided with holes therethrough to permit water to gravitate through the fill assembly. Air flows through the fill assembly between the trays to cool the water.

3,628,777

SAMPLING DEVICE FOR MULTIPLE HEARTH FURNACE

William J. Lavender, Edmonton, Alberta, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Aug. 4, 1970, Ser. No. 60,784
Int. Cl. F27b 1/10
U.S. Cl. 263—26 9 Claims



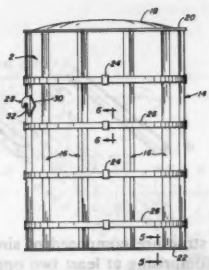
A sampling device for removing a sample of a particulate solid material falling within a vessel and especially suited for use in obtaining a sample of a particulate material falling between the hearths of a multiple-hearth furnace includes an elongated cylindrical tubular member which extends through a wall of the vessel or furnace. The inner end of the tubular member is formed as an upwardly open and open-ended section disposed within the vessel or furnace to collect particulate solid material falling therein. A ram plate can be moved through the tubular member by means of a connecting rod projecting from the outer end of the sampling device and, on inward movement of the ram plate, material collected in a channel section of the device is pushed out of the open inner end of that section. On outward movement of the ram plate, the particulate material collected in the channel section is pushed outwardly by the ram plate through the tubular member for discharge therefrom into a sample-receiving container.

3,628,778

INNER COVER AND METHOD OF MAKING THE SAME

Frank Kennedy, Johnstown, Pa., assignor to United States Steel Corporation

Filed Apr. 2, 1970, Ser. No. 25,059
Int. Cl. F27d 5/00
U.S. Cl. 263—49 R 8 Claims



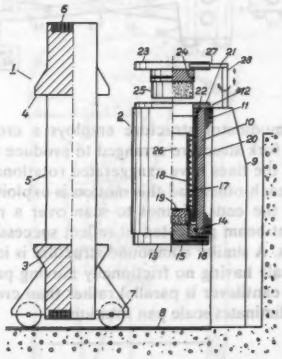
An annealing inner cover is formed of a plurality of arcuate plates having outwardly flared flanges along their vertical edges. The plates are connected by welds along adjacent vertical edges to form a circular shell having a plurality of spaced triangular projections formed by the flanges. A plurality of steel bands encircle the shell at several locations and bear against the apicies of the projections. The bands are held in place by U-shaped clips having the ends of their legs welded to the shell. A dome or roof is welded to the top of the shell. All welds are gastight.

3,628,779

FURNACE FOR HEAT-TREATING OBJECTS UNDER HIGH PRESSURE

Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 16, 1969, Ser. No. 866,887
Claims priority, application Sweden, Oct. 24, 1968, 14367/68
Int. Cl. C21d 1/00
U.S. Cl. 266—5 E 3 Claims

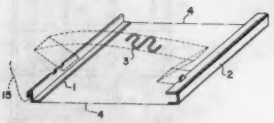


A vertical furnace includes a press stand and a cylindrical pressure chamber suspended in the press stand. The pressure chamber includes a high-pressure cylinder and end members. The high-pressure cylinder includes a furnace chamber provided with insulation between the pressure cylinder and the walls of the pressure chamber. This insulation is a cylindrical sheath which depends from an end member fixed in one end of the high-pressure cylinder. The end closures include insulating bodies which extend into the furnace member.

3,628,780
SEAT FRAME STRUCTURE

Nobuyoshi Saito, 1975 Haijima-cho, Akishima-shi, Tokyo, Japan

Filed July 17, 1969, Ser. No. 842,614
Claims priority, application Japan, July 30, 1968, Nov. 9, 1968, 43/64718, 43/81620
Int. Cl. F16f 3/00
U.S. Cl. 267—110 5 Claims

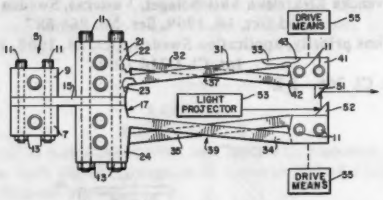


A seat frame structure composed of sinuous spring and a frame therefor comprising at least two opposed frame members. One of said frame members is of generally L-shaped cross section, one arm of the L having a turned over part with at least two openings for restraining an end of a sinuous spring. The other opposing frame member has at least one formation for stopping the other end of the sinuous spring the one end of which has been already fixed.

3,628,781
COMPOUND TINE FOR TUNING FORK OR THE LIKE

Boris F. Grib, Huntington, N.Y., assignor to Philamon Incorporated, Westbury, N.Y.

Filed Oct. 3, 1969, Ser. No. 863,647
Int. Cl. F16f 1/16
U.S. Cl. 267—154 6 Claims



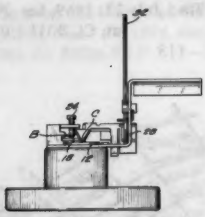
A light modulator structure employs a cross compound tine tuning fork structure arranged to produce the effect that the ends of the tines have exaggerated rotational motion with respect to each other and this motion is exploited by mirrors secured to the ends of tines to scan over a relatively wide angle a light beam projected to reflect successively from the two mirrors. A similar compound structure is incorporated in a simple scale having no frictionally moving parts. The scale compound cantilever is parallel rather than crossed and substantially eliminates scale pan rotation.

3,628,782
ADJUSTING AND CALIBRATING OF PRESSURE SWITCHES

Erich Kothe, Schiller Park, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Filed Dec. 1, 1969, Ser. No. 881,207
Int. Cl. F16f 1/18
U.S. Cl. 267—158 5 Claims

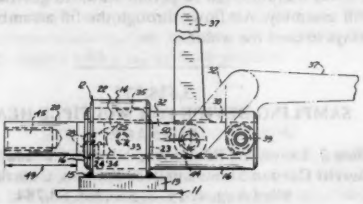
The force or degree of compression of the spring is adjusted by rocking the lever about its axis A–B by means of the manually operated cam acting on the lever at D. Calibration is effected by adjusting the screw at B to rock the lever about axis A–D. Any tool forces applied to the adjusting screw during adjustment cannot be transmitted to the spring to adversely affect calibration.



3,628,783
CLAMPS

Leland F. Blatt, Grosse Pointe, and William R. Schreiber, Detroit, both of Mich., assignors to Leland F. Blatt, Warren, Mich.

Filed Oct. 29, 1969, Ser. No. 872,212
Int. Cl. B23q 3/00; B25b 1/14
U.S. Cl. 269—91 6 Claims

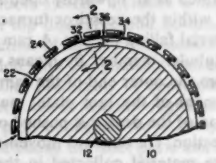


A push clamp for anchoring a workpiece against a support which includes a slotted body having a bore secured within a base assembly on said support, a plunger reciprocal in said body, a cantilever handle pivoted on the body and a link pivotally interconnecting the handle and plunger, pivotal connections being such that the handle may lock in both forward and retracted positions. The disclosure also includes a frictional lock movably mounted on said link for locking the plunger in forward thrust or retracted positions and for preventing wobble of the plunger.

3,628,784
FLEXIBLE FEED MEMBER FOR CARD-FOLDING APPARATUS

Francis E. Kohus, Cincinnati, Ohio, assignor to Clarence S. Betz, Cincinnati, Ohio, a part interest

Filed Sept. 22, 1969, Ser. No. 859,745
Int. Cl. B65h 3/06
U.S. Cl. 270—61 14 Claims



A flexible feed member is formed with suction cups thereon along its entire outer surface for engaging paper

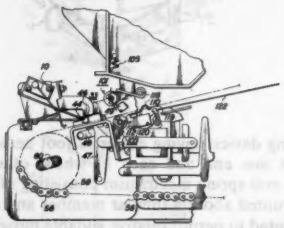
stock, which is to be folded by a card-folding apparatus, to advance the paper. The flexible feed member is securely, though releasably, anchored to the feed roller of a conventional card-folding apparatus by a flexible connector member which spans the adjacent ends of the feed member for forming it into a continuous band. The flexible connector member is formed of a very high tensile strength material such as Mylar, for example.

3,628,785

GRIP FORCE DETECTION APPARATUS

Edward J. Lavander, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,456
Int. Cl. B65h *5/08, 29/04*
U.S. Cl. 271—46 **4 Claims**



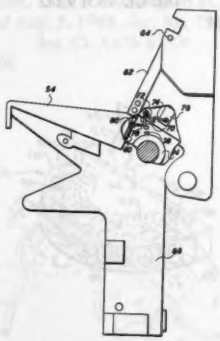
A grip force detection apparatus for a sheet transport having a gripping mechanism for transporting sheet material past xerographic processing stations. The grip force detection apparatus is arranged to pull sheet material away from the moving gripping mechanism if not properly gripped to effect safe delivery of the sheet material at a feed out station.

3,628,786

DOCUMENT HANDLING APPARATUS

Thomas O. Maloney, Webster, and Donald L. Pease, Marion, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,458
Int. Cl. B65h *7/06*
U.S. Cl. 271—57 **2 Claims**



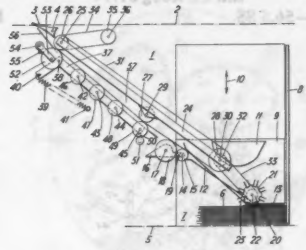
Xerographic-reproducing apparatus including a front face having a fixed housing portion and a pivotal housing portion. The pivotal portion has an aperture for receiving the leading edge of a document to be copied. Adjacent the aperture is a bar extending the length thereof, whereby objects other than a flat document will pivot the bar to inactivate the machine. Movement of the pivotal portion gives an operator access to the document-handling apparatus interior of the machine for the clearing of jams.

3,628,787

STACKING DEVICE

Gerard J. C. Boeve, Edegem, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 6, 1970, Ser. No. 17,090
Claims priority, application Netherlands, Mar. 6, 1969, 6903502
Int. Cl. B65h *29/14*
U.S. Cl. 271—68 **14 Claims**



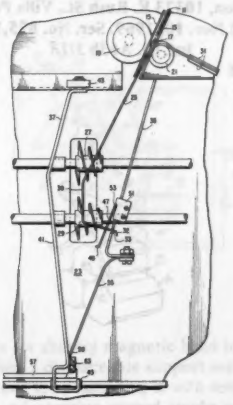
A stacking device is described for stacking articles diverted from a first conveyor in a predetermined location into a parallel stacking position. The device includes a second conveyor mounted between the predetermined location and the input of the stacking position. The second conveyor is pivoted about its input and near the predetermined location, such that the second conveyor is angularly displaced as a function of the thickness of a stack of articles accumulated in the stacking position. The effective path length of the second conveyor is also varied as a function of the angle it makes with the first conveyor.

3,628,788

JAM DETECTION DEVICE FOR DOCUMENT STACKING

William L. Simmons, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 19, 1970, Ser. No. 3,936
Int. Cl. B65h *31/06*
U.S. Cl. 271—87 **7 Claims**



A stacking device capable of receiving documents, such as checks or standard data processing cards, and more specifically a sensor for detecting a jam of documents during a stacking operation. The sensor, which may be a leaf spring, extends outwardly from behind a kicker spring for propelling documents broadside on the fly onto a stack, into an area ad-

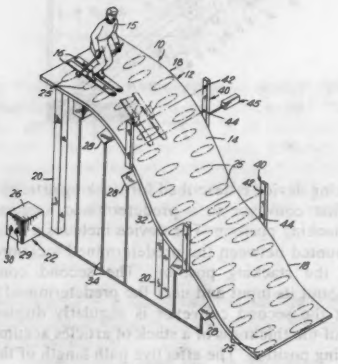
jacent the normally stable position of the face of the accumulating stack. A crumpled document or an advance in the face of the stack will activate the sensor.

3,628,789

ULTRASONIC OBJECT-SUPPORTING SYSTEM IN A SKI-SLOPE OR THE LIKE

Leonard W. Suroff, Jericho, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,451
Int. Cl. A63g *21/14*
U.S. Cl. 272—56.5 SS **11 Claims**



An object-supporting system in the form of a ski support surface adapted to transmit ultrasonic mechanical vibrations so as to quantitatively reduce the frictional sliding engagement between the skis of the skier and the ski support surface.

3,628,790

GYMNAST TRAINER CUSHIONS

Donald W. Gordon, 10323 E. Rush St., Villa Park, Calif.

Filed Nov. 10, 1969, Ser. No. 875,199
Int. Cl. A63b *5/18*
U.S. Cl. 272—64 **7 Claims**

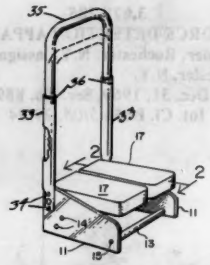
A set of polyhedral cushioning bodies including several of regular polygonal cross section having means for attaching them together in stacked relation, and one of wedge shape, cooperable with the others as a landing mat for training dive rolls. The individual units of regular cross section are useful for training in dive-rolls, handsprings, hand-vaulting, log-rolling and the like.

3,628,791

PIVOTED JOGGING PLATFORM WITH ADJUSTABLE SPRING-RESISTANCE

Ricardo Garcia, 1045 W. 27th St., Hialeah, Fla.

Filed Aug. 3, 1970, Ser. No. 60,440
Int. Cl. A63b *23/04*
U.S. Cl. 272—83 R **3 Claims**



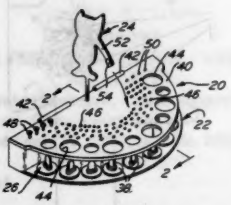
A jogging device having a pair of foot pedals or platforms pivoted at one end and each of whose other ends is supported by coil spring mechanism consisting of a compression spring mounted about a tubular member and a pin telescopically mounted to permit relative slidable movement of the tubular member and pin when a person is jogging on the device. The spring mechanism is pivoted at its upper portion to the foot pedals and the lower portion is received in one of a plurality of notches formed in an arcuate rack. The rack is so positioned with relation to the spring mechanism that mere selection of the notch to receive and support the lower end portion of the spring mechanism permits persons of different weights to use my jogging device without changing the horizontal position of the platforms.

3,628,792

GAME APPARATUS INVOLVING MAGNETIZED SELECTION OF GAME PIECES

Phyllis Frederick, Plainfield, N.J., and Charles R. Zimmerman, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 26, 1970, Ser. No. 14,602
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 M **7 Claims**



A game apparatus which comprises a support member which simulates a large slab of Swiss cheese, a body which simulates the figure of a cat which is resiliently and pivotably mounted to the support member and a plurality of game pieces, each of which is representative of either a mouse or a mouse trap. The game apparatus is used as a guessing game between two, three or four players. The apparatus includes a magnet in the arm of the cat simulated body and magnetizable playing pieces which enable a novel interaction between

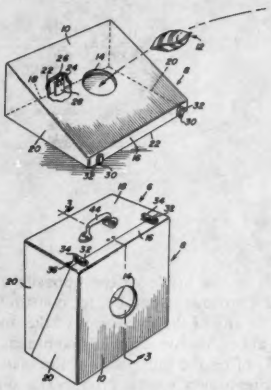
the cat and the mice which are hidden in openings provided within the cheese-simulating support member.

3,628,793

SANDBAG AND TARGET APPARATUS IN WHICH THE TARGET ALSO SERVES AS A CARRYING CASE

Richard M. Mudloff, 6921 Vaughan St., Detroit, Mich.

Filed Mar. 11, 1970, Ser. No. 18,559
Int. Cl. A63b 63/00
U.S. Cl. 273—105 R 3 Claims



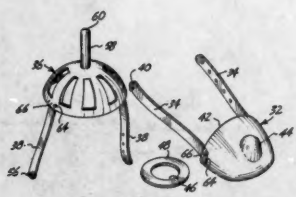
An indoors or outdoors sandbag tossing and point-scoring game device characterized by a pair of like wedge-shaped half-sections which when assembled and latched, provide a carrying and transporting case. When unfastened and parted these sections can be used, individually or collectively, as sandbag-trapping targets. In use, each half-section provides an inclined surface and has a centralized sandbag-receiving hole.

3,628,794

SPORTING EQUIPMENT FOR PLAYING GAME CALLED TOE TOSS

Richard P. Conture, 1715 S. Washington St., Tacoma, Wash.

Filed Aug. 5, 1968, Ser. No. 750,336
Int. Cl. A63b 67/06
U.S. Cl. 273—100 1 Claim



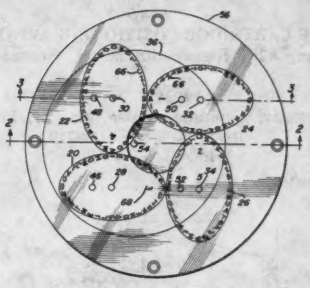
Sporting equipment is provided for the skilled aerial transfer of a formed object from a confinement overlay adapted to securement on one's foot, to a receiving overlay adapted to securement on one's head, as one's foot is swung in a kicking motion.

3,628,795

INTELLIGIBLE INFORMATION FORMING OR SUGGESTING DEVICE

Milton S. Hopkins, Newhall, Calif., assignor to Walter Milton Hopkins; Eileen Carlock Hopkins; Lorin Roy Gillogly and Gwendolyn Maybeth Gillogly, part interest to each

Filed Apr. 30, 1970, Ser. No. 33,285
Int. Cl. A63f 9/00
U.S. Cl. 273—161 4 Claims



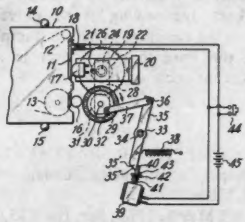
A game device having four adjacently positioned coplanar modified elliptical rotors with indicia imprinted around the edges of each rotor. Linked crank means are provided for simultaneously rotating the rotors in a manner resulting in relative rolling. In any stationary position, the edgewise proximate indicia on adjacent rotors are combined to suggest intelligible information and/or to arouse related associated mental ideas, thoughts and memories.

3,628,796

APPARATUS FOR SHIFTING MAGNETIC HEAD IN MULTITRACK TAPE PLAYER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Feb. 17, 1970, Ser. No. 12,018
Claims priority, application Japan, Feb. 20, 1969, 44/14295
Int. Cl. G11b 5/00, 15/00
U.S. Cl. 274—4 A 6 Claims



An apparatus for shifting magnetic head in multitrack tape player comprising a displaceable support member coupled to the magnetic head for positioning it with respect to a plurality of discrete and separate record tracks on the tape, cam means coactable with the support member for controlling displacement of the magnetic head to play the record tracks, driving means for rotating the cam means in single steps to position the magnetic head to successive record track positions, and control means for controlling operation of the driving means. The driving means includes a frictional idler wheel which is provided on a swingable swing lever and is

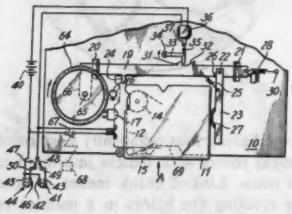
caused to be rotatably driven by a capstan for drivingly feeding the tape, and a mechanism rotating the cam means gradually at a predetermined angle when the wheel rotates around its axis. The control means causes the swing lever to automatically swing, upon one rotation of the frictional idler wheel, to a position where the wheel does not receive the rotational force of the capstan. And, in response to the record track switching signal, the control means allows the swing lever to swing to a position where the wheel is rotatably driven by the capstan.

3,628,797

TAPE-CARTRIDGE-POSITIONING APPARATUS

Itsuki Ban, 829, Higashi-Oizumachi, Nerima-ku, Tokyo, Japan

Filed May 19, 1970, Ser. No. 38,704
Claims priority, application Japan, May 21, 1969, May 21, 1968, 44/38718; 44/38719
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 B **9 Claims**



A tape-cartridge-positioning apparatus for an endless magnetic tape cartridge player, comprising a cartridge moving lever engageable with a tape cartridge laterally insertable into a player housing for moving the cartridge from a nonplay position into a play position and back into the nonplay position, a tension spring biasing the cartridge moving lever in the direction where the cartridge is moved from the play position to the nonplay position, a stopper means retaining the cartridge moving lever in a predetermined first position or second position against the bias of the tension spring, a control means for controlling operation of the stopper means, and a lever moving means for moving the lever into the second position against the bias of the tension spring by use of rotational force of a capstan for running the tape in response to disengagement of the stopper means from the cartridge moving lever in the first position whereby the cartridge is moved from the nonplay position to the play position when the cartridge moving lever is moved to the second position whereas the cartridge is held in the play position and played during the time that the lever is retained by the stopper means in the second position.

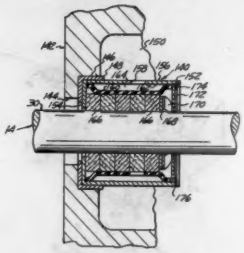
3,628,798

RADIALLY COMPRESSED SHAFT SEALING DEVICE

John F. Mehlhope, Detroit, Mich., assignor to M P Pumps, Inc., Detroit, Mich.

Filed May 8, 1969, Ser. No. 823,039
Int. Cl. F16j *15/46*
U.S. Cl. 277—34 **1 Claim**

This shaft seal is adapted to be installed in the shaft bore of the housing or frame of the machine, such as a pump, of which the shaft is to be sealed. In its simplest form (FIG. 1) it consists of an annular elastomeric diaphragm sleeve disposed coaxial with but spaced radially away from the shaft to be sealed and having its opposite ends bonded or otherwise secured to the bore wall with pressuretight connections, the annular compartment between the diaphragm sleeve and the shaft being occupied by a packing consisting of compressible packing rings or gaskets. The bore wall has ports which, in the case of a pump, communicate with the discharge side thereof to receive pressure fluid therefrom. In a second form (FIG. 2), the port is connected to a conduit leading to an external source of pressure fluid. In a third form (FIG. 3), the bore contains a hollow annular expansible member, such as an elastomeric bladder, connected by a conduit to an external source of pressure fluid. In a fourth form (FIG. 4), the diaphragm sleeve is secured at its opposite ends to the shaft bore by expansible snap rings engaging axially spaced annular grooves in the shaft bore wall. In a fifth form (FIG. 5), the diaphragm sleeve is bonded or otherwise secured at its opposite ends to the inside of the opposite ends of a flanged cylindrical cartridge whereby to constitute a replaceable shaft seal. In any of the five forms of the invention, the pressure fluid acting on the annular diaphragm sleeve (FIGS. 1, 2, 4 and 5) of on the inner wall of the bladder (FIG. 3) acting as a diaphragm sleeve produces a direct radial force which directly compresses the packing rings in a purely radial direction against the shaft without substantially compressing them in an axial direction.

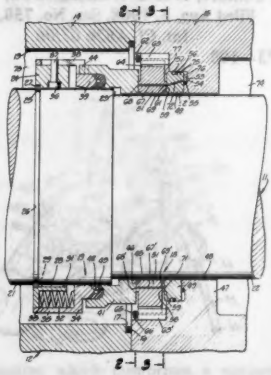


3,628,799

MECHANICAL SEAL ASSEMBLY WITH LEAKAGE CONTROL

Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 3,836
Int. Cl. F16j *15/40, 15/44*
U.S. Cl. 277—27 **5 Claims**



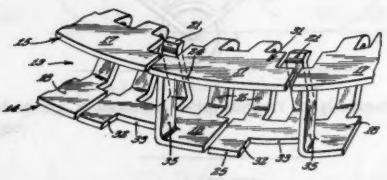
A mechanical seal assembly having a rotary sealing ring and a nonrotatable sealing ring carried by a housing flange, including fluid-pressure-responsive means for compensating for flange distortion to thereby control warpage of the sealing surface of the nonrotatable sealing ring to regulate leakage between the cooperating sealing surfaces of the sealing rings.

3,628,800

COMBINATION CIRCUMFERENTIAL EXPANSION AND SPRING FINGER OIL CONTROL PISTON RING

Herbert F. Prasse, Town and Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

Filed May 6, 1970, Ser. No. 35,000
Int. Cl. F16j 9/20
U.S. Cl. 277—140 12 Claims



A two component oil control piston ring accommodating wide tolerances in the dimensions of the components and having three-ring contact with the piston cylinder preventing cocking or tilting while increasing sealing efficiency. One of the components is a conventional thin rail ring and the other component is a spacer-expander ring carrying the rail ring and having two axially spaced cylinder-wall-engaging rings or scraping edges and upstanding spring fingers engaging the inner periphery of the rail ring. The spring fingers act independently of the contraction and expansion of the spacer-expander so that the peripheries of both rings may sealingly engage the cylinder wall regardless of radial depth variations of the rail ring.

3,628,801

TOY ANIMAL TRICYCLE

Anne Lambrecht, Box 88, Ceylon, Saskatchewan, Canada

Filed Apr. 20, 1970, Ser. No. 29,952
Int. Cl. A63g 17/00
U.S. Cl. 280—1.202 4 Claims

An animal such as a horse is moulded over a frame which has a pair of rear wheels and a steerable front wheels. Turning the handle bars pulls on the reins and turns the head together with the front wheel.

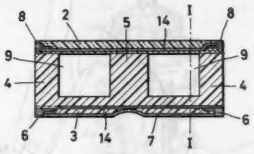
3,628,802

FIBER REINFORCED PLASTIC SKI AND METHOD OF MAKING THE SAME

Osamu Hashimoto, and Nobuyuki Kawai, both of Hamamatsu-shi, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Nov. 17, 1969, Ser. No. 877,284
Claims priority, application Japan, Nov. 21, 1968, 43/85489
Int. Cl. A63c 5/12
U.S. Cl. 280—11.13 L 6 Claims

A fiber-reinforced plastic ski comprising a body and an upper plate joined to form inside cavities, said body being constructed by integrally molding a baseplate of laminated FRP materials, right and left side members of the same material, at least one reinforcing rib of the same materials



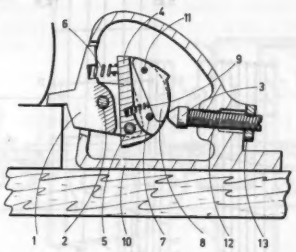
rising from the baseplate and having the same height as said side members, running edges located on the lower surface of the baseplate at both sides thereof and a running surface member interposed between running edges on the lower surface of the baseplate, and said upper plate consisting of laminated FRP materials and having top edges embedded in its upper surface at both sides thereof.

3,628,803

RESILIENT LOCKING DEVICE FOR SECURITY SKI BINDINGS

Georges P. J. Salomon, 34, Avenue de Larery, Annecy, Haute-Savoie, France

Filed Sept. 2, 1969, Ser. No. 854,367
Claims priority, application France, Sept. 6, 1968, 1068-74
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 9 Claims



Resilient locking device front or rear security ski bindings in which means are provided to retain the sole of the boot against the force produced by an inclined position of the skier during the resilient cycle preceding releasing of the security bindings, which comprises means for decreasing said force while increasing a possible vertical stroke of the sole of the boot.

3,628,804

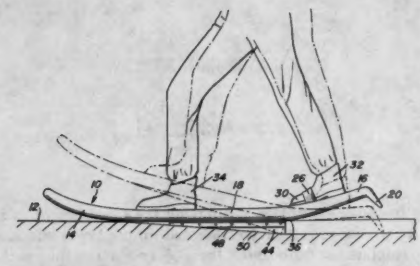
SNOW SURFBOARD

Ronald Carreiro, 173 Bay St., Taunton, Mass.

Filed Oct. 9, 1969, Ser. No. 865,064
Int. Cl. B62b 13/00
U.S. Cl. 280—18 7 Claims

An elongated horizontal board for standing upon with both feet and of a length approximately five to six times the length of the average shoe and of a width approximately two to three times the length of an average shoe. The forward end of the board is rounded in plan shape and slightly upwardly curved and the rear opposite side marginal edge portions of the board are slightly rearwardly convergent. The rear end quarter of the board is inclined approximately 20° rearwardly and upwardly and includes at least one depending brake member engageable with a surface over which the board is moving when the board is excessively rocked backward over a fulcrum area thereof defined at the juncture of the rear end

quarter and forward portion of the board. When the board is rocked moderately rearwardly over the fulcrum area lateral foot pressure in opposite directions in opposite sides of the

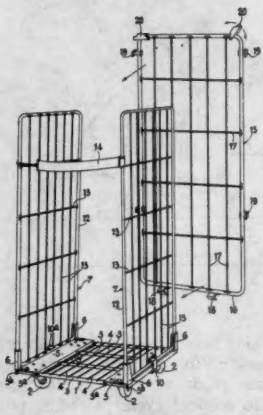


fulcrum area may be utilized to angularly displace the board about an upstanding axis passing through the fulcrum area for steering purposes.

3,628,805
HANDLING TRUCK

Jean Archer, Valentigney, France, assignor to Cycles Peugeot, Beaulieu-Valentigney, France

Filed Apr. 22, 1970, Ser. No. 30,718
Claims priority, application France, Apr. 30, 1969, 6913855
Int. Cl. B60p *9/00*
U.S. Cl. 280—33.99 T **6 Claims**



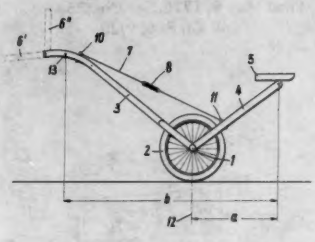
Handling truck having a platform including two U-section side members constituting two sides of the platform. Two U-section supports are mounted on each side member and arranged in facing relation to each other so as to receive vertical grills in the recesses defined by the flanges of the U-section supports. Several similar truck platforms can be stacked on each other by engagement of outer flanges of their U-section side members in the recesses of the U-section supports of another handling truck platform.

3,628,806
SULKY

Walter Weber, 25/11 Clemensstrasse, Munich, and Herbert Templin, Heiligendorf near Wolfsburg, both of Germany

Original application May 19, 1967, Ser. No. 639,894, now Patent No. 3,503,624, dated Mar. 31, 1970. Divided and this application Oct. 29, 1969, Ser. No. 871,338
Int. Cl. B62d *27/04*
U.S. Cl. 280—63 **8 Claims**

A sulky normally does not provide for variations in weight between different riders, and this is achieved in the invention by using struts between the frame and the axles which are pivotably adjustable so as to vary the angle between them.



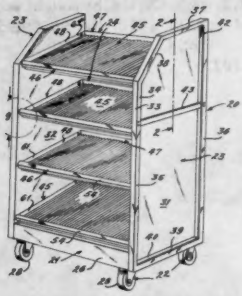
A modification of the invention provides for a single strut between the frame and each axle, the said strut being pivotable and held in position by bracing members.

Shock-absorbing means are also provided.

3,628,807
MOBILE MERCHANDISER CART

William H. Fullington, Ballwin, and Melvin O. Maisak, Florissant, both of Mo., assignors to Pet Incorporated, St. Louis, Mo.

Filed June 23, 1969, Ser. No. 835,455
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.3 **13 Claims**



A mobile merchandiser cart for the transportation, storage and display of food and beverage products from the production source to the retail consumer, the cart having a plurality of sloping shelves provided with antifriction surfaces. In addition, the cart may have offset wheel means and cantilevered shelves on supporting end panels constructed and arranged to provide nesting of the carts when empty.

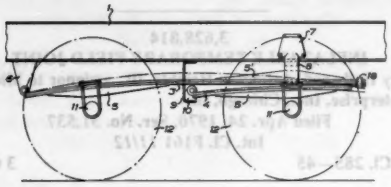
3,628,808
BOGIE STRUCTURES, PARTICULARLY FOR LAND VEHICLES

Steffen Mohl, Skodsborg Park 58, Skodsborg, Denmark

Filed May 1, 1969, Ser. No. 820,821
Claims priority, application Sweden, May 8, 1968, 6169/68
Int. Cl. B01g *19/00*
U.S. Cl. 280—104.5 **1 Claim**

In a bogie structure the wheel axles are carried by leaf springs secured to the bogie frame, and one or more leaf springs extend throughout the length of the bogie and have

their end portions laterally nonrotatably mounted in supports provided on the bogie frame, while the end portion of one



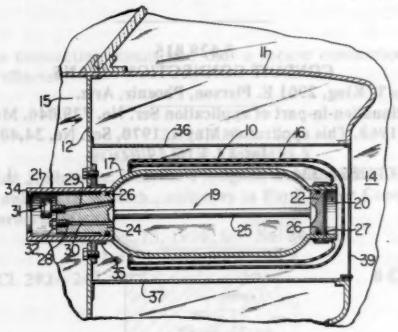
leaf spring is movable in its support longitudinally of the bogie.

3,628,809

PASSENGER SAFETY APPARATUS FOR VEHICLES

John Cirillo, Nutley, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed Oct. 1, 1969, Ser. No. 862,687
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB 13 Claims



Apparatus for protecting an occupant of a vehicle during a collision by inflating a bag to cushion and restrain the occupant. The pressure vessel for inflating the bag is provided with an outlet opening connected to the bag and an open-ended tubular section aligned with the outlet opening. A valve member is positioned in the outlet opening and a piston positioned in the tubular section is connected to the valve member to balance the greater portion of the pressure force acting on the valve member. The piston carries a mass to move the valve member and open the outlet in response to a predetermined rate of change of speed. The tubular section of the container is adapted to extend into the engine compartment of the vehicle and the piston carries a pressure gauge and a valved fill port so that the container can be serviced from the engine compartment.

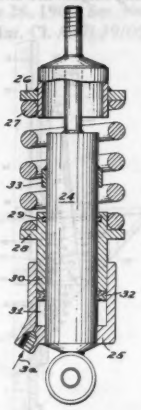
3,628,810

LEVEL ADJUSTMENT FOR MOTOR VEHICLES

Kurt Graef, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Continuation of application Ser. No. 762,002, Sept. 24, 1968, now abandoned. This application July 29, 1970, Ser. No. 64,108
Int. Cl. B60g *3/00*
U.S. Cl. 280—124 13 Claims

A leveling system for maintaining a motor vehicle body at an established height above the ground including a shock absorber with a concentric coil spring. An annular spring seat engages one end of the coil spring and is slidable on the shock absorber. The seat also forms a part of an expansible



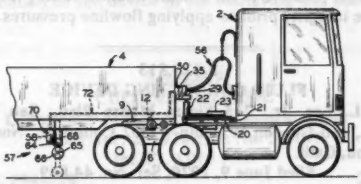
chamber that may be pressurized to increase the load on the coil spring and compensate for a change in vehicle loading.

3,628,811

AUTOMATIC COUPLING DEVICE

Melvin Rivers, Toledo, Ohio, assignor to Magnatronic Controls, Inc., Toledo, Ohio

Filed Oct. 22, 1969, Ser. No. 868,307
Int. Cl. B60d *1/08*
U.S. Cl. 280—421 9 Claims



A mechanism for use on a tractor-trailer rig for automatically connecting and disconnecting the tractor-trailer service lines and the kingpin of a trailer to and from the fifth wheel of a tractor, and specifically the invention incorporates a system based on mutually attracting magnetic plates for automatically connecting and disconnecting the auxiliary service line connections, and incorporated therewith is a rotatable plate member serving to hold one of the magnetic plate members and also serving as a rotatable base for such magnetic plate member so that it can be aligned with the other magnetic plate member whenever the tractor and trailer are not aligned properly; and further included in this invention is an automatic system for raising and lowering the dolly wheels on the trailer as an integral part of the operation of the system.

3,628,812

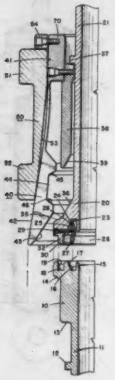
REMOVABLE PIPE CONNECTOR

Edward Larralde, Santa Barbara; Ronald A. Weber, Ojai; James W. E. Hanes, Ventura, and Thomas W. Childers, Woodland Hills, all of Calif., assignors to Esso Production Research Company

Filed Dec. 1, 1969, Ser. No. 881,022
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 23 Claims

A connector for joining the ends of two pipes or flow lines. A hub member is connected to the end of each pipe.

Each hub member has sealing surfaces which effect a closure between the mated hub members. A plurality of expandable-contractible hub-locking fingers are slidably arranged on one



of the pipes to engage the hub members and lock them together. A slidable sleeve is arranged about the locking fingers to engage and collapse them in such a manner as to cause the hubs to mate to effect a closure for fluids contained under pressure in the pipes without leakage. The locking fingers hold the hub members in a sealed position until the locking fingers are driven to an unlocked position. The locking fingers act as a guide to align the hubs when drawn together so as to readily effect a sealed closure between the pipes. Means is provided for supplying a test fluid under pressure to the closure to allow testing thereof for pressure integrity prior to applying flowline pressures.

3,628,813

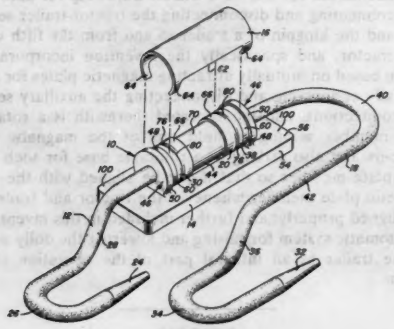
FLUID CONNECTING DEVICE

Henry L. Lee, Jr., 745 Sierra Madre Blvd., San Marino, Calif., and Gordon W. Culp, 12802 Collins St., North Hollywood, Calif.

Filed June 9, 1970, Ser. No. 44,849

Int. Cl. F16l *31/00*; A61m *05/00*

U.S. Cl. 285—31 **11 Claims**



A fluid connecting device particularly adapted for use in connection with hemodialysis operations to permit repeated access to the blood system of chronic hemodialysis patients. The device comprises a pair of tube elements and a base structure adapted for rigidly mounting the tube elements in spaced relationship. A compressible, resilient, elongated conduit member is compressed between the tube elements, to normally intercommunicate the same. When hemodialysis is required, the conduit member can be removed from the device utilizing only one hand and replaced by a similar member providing inlet and outlet connections for the hemodialysis operation.

3,628,814

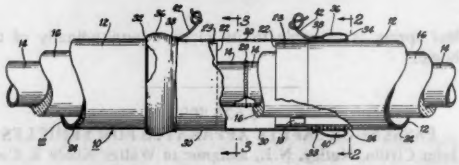
INFLATABLE TEMPORARY FIELD JOINT

Harry Hallwood, Arlington Heights, Ill., assignor to Midweso-Enterprise, Inc., Chicago, Ill.

Filed Apr. 24, 1970, Ser. No. 31,537

Int. Cl. F161 *11/12*

U.S. Cl. 285—45 **3 Claims**



A joint for temporary bridging and sealing spaced ends of conduit to prevent entry of moisture under field conditions is provided by a flexible elongated plastic sleeve having inflatable circumferential collars at the ends of the sleeve.

3,628,815

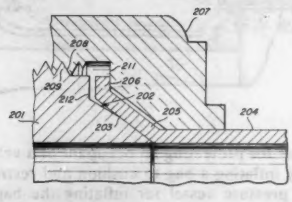
CONDUIT CONNECTION MEANS

Louis T. King, 2901 E. Pierson, Phoeniz, Ariz.

Continuation-in-part of application Ser. No. 729,046, May 14, 1968. This application May 4, 1970, Ser. No. 34,407

Int. Cl. F16l *19/02*

U.S. Cl. 285—334.4 **1 Claim**



A conduit connection means comprising a pair of hollow structures having opposed conical bore portions, at least one of the hollow structures being a thin wall tubular member having a clamping flange surrounding the same and conforming to an outer wall of the conduit which is conical and substantially conically parallel to said conical bore portion; and a seal ring disposed between said opposed conical bore portions and having a pair of generally conical portions adapted to provide an annular seal ridge serving as a seal pressure concentration area adapted to bear between a respective one of said conical bore portions and conical seal ring portions.

3,628,816

SLEEVE NUT CONNECTOR

Peter M. Ross, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

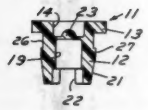
Filed Feb. 2, 1970, Ser. No. 7,493

Int. Cl. F16b *9/02*

U.S. Cl. 287—23 **8 Claims**

A connecting means adapted to retain a rodlike element within an aperture of a lever or the like. The connecting means has a rodlike element receiving bore, passage through which is blocked by an obstruction. A force applied to the rodlike element sufficient to cause the latter to displace or

shear the obstruction is also sufficient to assure that the rodlike element will be completely received within the bore



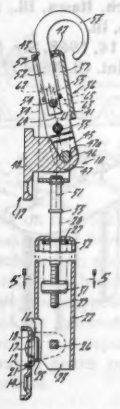
of the connecting means and that a secure connection has been effected.

3,628,817

HOOD LATCH ASSEMBLY

Edward J. Sheahan, Dearborn Heights, and Donald F. Staisil, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 13, 1970, Ser. No. 80,421
Int. Cl. E05c 5/00, 19/14
U.S. Cl. 292—247 **8 Claims**



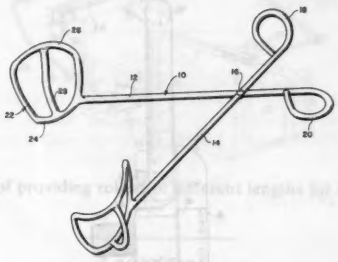
A spring-loaded overcenter latch assembly for latching a vehicle body closure, such as a hood, to a vehicle body structure. An auxiliary latch device maintains the primary latch element of the latch assembly in its overcenter relationship even under severe vehicle jounce conditions that could tend to cause disengagement of the primary latch element from its coacting keeper device.

3,628,818

EGG-HANDLING DEVICE

Maurice B. Pittman, 1786 Oakwood Drive, Memphis, Tenn.

Filed June 26, 1969, Ser. No. 836,805
Int. Cl. A47j 29/06
U.S. Cl. 294—16 **1 Claim**



An egg-handling device comprising a pair of levers or arm members pivotally secured in scissor-type relationship for facilitating opening and closing thereof. Each arm member is provided with a finger-receiving eye at one end thereof and complementary egg receiving and retaining half sections on the opposite end thereof. Each half section comprises an arcuate cage-type member of a configuration generally similar to the outer configuration of a portion of an egg whereby an egg may be easily retained within the combined half sections in the closed position of the arm member. The longitudinal axis of each half-section cage member is substantially perpendicular to the respective arm member for facilitating manipulation of the device in the retrieving and handling of an egg.

3,628,819

CULINARY UTENSIL

Wanda L. Fowler, 910 N. Oaks Ave., Ontario, Calif.

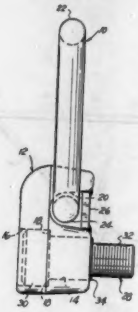
Filed Apr. 2, 1970, Ser. No. 25,187
Int. Cl. A01d 9/06
U.S. Cl. 294—50 **2 Claims**

An ejector-type culinary utensil has a plurality of tines and an ejector bar slidable on said tines. A lever arrangement connected to the ejector bar has an ejector tab adjacent the main handle, whereby the user may operate the tab to automatically eject a food product from the tines.

3,628,820
SWIVEL-TYPE HOIST RING

Leland F. Blatt, 24121 Mound Road, Warren, Mich.

Filed Dec. 18, 1969, Ser. No. 886,256
Int. Cl. B66c 1/10, 1/24
U.S. Cl. 294—82 R 1 Claim

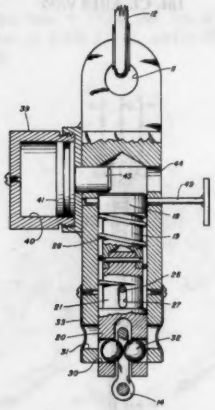


A hoist ring assembly which includes a base block having a bore therein, extending from the front to the back thereof, a screw seated in the bore having a threaded portion which extends beyond the block, the block being adapted to revolve around that portion of the screw seated in the bore, and a hoist ring mounted in the block above the bore and adapted for swiveling movement on an axis transverse to that of the bore.

3,628,821
OCEAN BOTTOM RELEASE DEVICE

Asa M. Reece, Plantation, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 8, 1970, Ser. No. 1,476
Int. Cl. B66c 1/36
U.S. Cl. 294—83 AA 7 Claims



A bottom release device for placing a load on the ocean floor in a desired position from a shipboard crane or winch. The device combines a spring-operated release for releasing a shackle-supported load whenever the load comes off the spring such as occurs when the load comes to rest on the ocean bottom and a hydrostatic plunger for preventing operation of such spring release until the ambient pressure thereon is equal to the pressure at a predetermined water depth.

3,628,822
WELL TOOLS

James H. Bostock, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

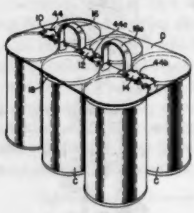
Filed Sept. 15, 1969, Ser. No. 857,857
Int. Cl. E21b 31/02
U.S. Cl. 294—86.18 15 Claims

A pulling tool for retrieving devices from well bores including a tool housing supportable from a wire line tool string, a pulling collet for releasably engaging a fishing neck on a well device, a locking sleeve movable over the collet for locking the collet on the fishing neck responsive to a downward force on the tool housing, and supporting structure for the collet and sleeve including one shear pin holding the locking sleeve in nonlocking position until a predetermined downward force is applied to the tool housing and another shear pin for releasing the locking sleeve to release the tool from a stuck well device.

3,628,823
MULTIPACK CARRIERS

Ouglјesa Jules Poupitch, Itasca, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 14, 1968, Ser. No. 767,387
Int. Cl. B66c 1/10
U.S. Cl. 294—87.2 3 Claims



A multiunit package of containers, such as cans, with outward end beads or rims and a carrier for the package in the form of a strip of suitable material, preferably plastic, carrying clips, either integral with the strip or separately attached thereto, and appropriately spaced to engage adjacent and abutting container rims in the package; and when the strip is assembled to one end of the package, the strip may be looped intermediate adjacent clips to provide finger gripping means for carrying the package or separate handle means

may be provided; or when the strip is applied to opposite ends of the packaged containers, the strip may have included handle means for carrying the package with the containers in horizontal position.

3,628,824
IMPLEMENT FOR GRASPING SMALL OBJECTS
David Leuw, Haifa, and Meir Dror, Kiryat Bialik, both of Israel, assignors to The State of Israel
Filed Aug. 4, 1969, Ser. No. 847,130
Int. Cl. B25b *9/00*
U.S. Cl. 294—99 **5 Claims**

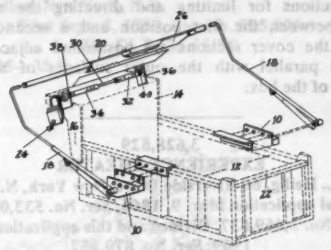
An implement for grasping small objects comprising a pair of spaced manipulatable strips, a flat transverse wall joined to and extending across one end of the strips, and a pair of jaws formed on the outer face of the transverse wall, the latter being resilient, and the jaws being spaced from each other a distance slightly less than the dimensions of the object to be grasped but being movable sufficiently apart to permit reception of the object therebetween when the strips are pressed toward each other to flex the transverse wall.

3.628.825
AUTOMOBILE CAMPER
Mitchell Hannoosh, c/o Poly Slides, Inc. Box 132, Wakefield, Mass.
Filed Jan. 26, 1970, Ser. No. 5,624
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **5 Claims**

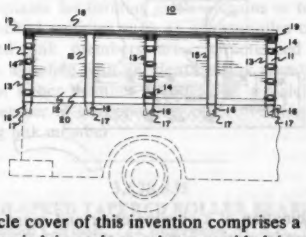
A camper for mounting on the roof of an automobile, the camper comprising a rectangular frame slightly wider than the roof with a leg at each corner, pivots for connecting the legs to the frame to swing from horizontal positions at the sides of the frame to depending positions, the legs being longer than the height of the automobile so as to hold the frame above the roof when in said depending positions, and a hardtop covering said frame, pivots and legs when the legs are in said horizontal positions.

3,628,826
UNIVERSAL MOUNTING FOR TRUCK COVERS
Louis F. Sibley, RFD #1, Hardwick, Mass.
Filed Oct. 9, 1969, Ser. No. 865,034
Int. Cl. B60p *7/04*
U.S. Cl. 296—98 **1 Claim**

A rolled cover for the headboard or cab of a truck wherein the cover can be pulled out as by a bail to the rear of a truck to cover the contents thereof, and a telescoping adjustable mounting for fitting trucks of different widths without the necessity of providing rollers of different lengths for the purpose.

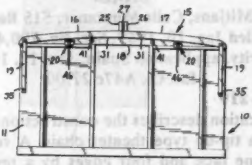


3,628,827
VEHICLE COVER
James A. Bailey, Idaho City, Idaho, and Harry E. Turner, 1509 North 18th, Boise, Idaho
Filed Feb. 13, 1970, Ser. No. 11,242
Int. Cl. B60j *7/06*
U.S. Cl. 296—137 **2 Claims**



The vehicle cover of this invention comprises a framework assembly carried in stake pockets provided in truck body beds and a canopy slidably carried thereby. The canopy includes latching means operable to engage the opposite sides of the truck body to hold the canopy under tension over the framework assembly to the truck body bed. The canopy is operable to slide over the framework assembly much like a roll top desk to provide access to a truck body bed at respective sides thereof.

3,628,828
VEHICLE BOX COVER
Gerald A. Page, and James E. Page, both of Westhope, N. Dak.
Filed May 14, 1970, Ser. No. 37,101
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B **17 Claims**



A pair of rigid cover sections cooperating to close the upwardly directed opening of a vehicle box in a first position and having a single elongated link pivotally attached between

the box and each end of each section to limit the movement of the sections and rollers attached to an end section positioned adjacent and in parallel with the upper edge of each end of the box, said rollers being positioned to engage the cover sections for limiting and directing the movement thereof between the first position and a second position wherein the cover sections are positioned adjacent an in generally parallel with the outer surfaces of upstanding sidewalls of the box.

3,628,829

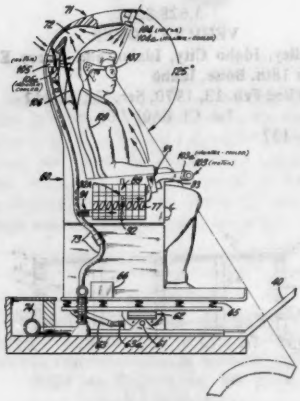
EXPERIENCE THEATER

Morton L. Heilig, 60 Riverside Drive, New York, N.Y.

Original application Mar. 9, 1966, Ser. No. 533,017, now Patent No. 3,469,837. Divided and this application July 8, 1969, Ser. No. 870,852

Int. Cl. A47c *1/12*

U.S. Cl. 297—217 **6 Claims**



The combination of a viewing chair and sense-stimulating means for use in motion picture or television theaters is provided comprising a seat with armrests and having a back which terminates into a hood over the chair, support means for the chair including means adapted to rock the chair in various directions, means for vibrating said chair, odor-producing means associated with said chair, odor-conducting conduits associated with said odor-producing means, means for moving air through the odor-producing means and the odor-conducting conduits towards the face of a spectator seated in said chair, air passageways associated with the chair having exit ports for directing air towards various portions of the spectator's body, means for feeding air to the air passageways, exhaust means associated with the hood of the chair for removing said fed air and odors, and a loudspeaker associated with the hood of said chair.

3,628,830

CHAIR

Jose Figueras Mitjans, Calle Muntaner, 515 Barcelona, Spain

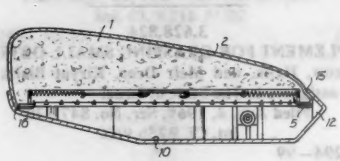
Filed Jan. 10, 1969, Ser. No. 790,410

Claims priority, application Spain, Jan. 15, 1968, 349,780

Int. Cl. A47c *27/00*

U.S. Cl. 297—219 **9 Claims**

The specification describes the construction of a seat and a backrest for a tip-up type theater chair. A resilient body is covered on one face and four edges by a removable fabric cover. The cover has a hem containing a reinforcing cord. There are a number of eyelets formed in the fabric cover adjacent the hem. The resilient body is supported on a rectangular frame which has a number of hooks projecting into the rectangular space inside the frame and towards the resilient body. The hem of the cover is taken around the frame, underneath it and into the rectangular space within the frame where the apertures along the hem are hooked onto the



hooks on the frame. The cover is thus held tightly over the resilient body. The frame is held in a casing and the casing together with the frame and upholstery forms a unit (backrest, armrest or seat) for a chair. The construction of the casing is discussed in detail.

3,628,831

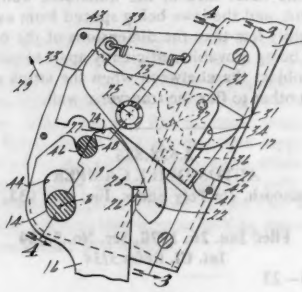
SEAT BACK POSITION CONTROL MECHANISM

Albert R. Close, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 5, 1970, Ser. No. 43,889

Int. Cl. A47c *3/00*; B60n *1/02*

U.S. Cl. 297—379 **15 Claims**



A seat back position control mechanism for a vehicle seat assembly that has a generally horizontal seat structure and an upstanding backrest structure pivotally supported on support arms for tiltable movement forwardly over the seat structure. A latch pawl normally is maintained in latching attitude and its inertia is a factor in preventing backrest movement upon the occurrence of a predetermined maximum vehicle deceleration. Following such a deceleration, a secondary inertia means in the form of free-swinging pendulum means maintains the latch pawl in latching attitude and acts as a time delay release. Manual activation means are also provided to permit movement of the latch pawl from its latching attitude. Further, a shiftable pivot means cooperates with the pendulum means to prevent undesired forward tilting movement of the backrest and an attached occupied child seat upon normal braking of the vehicle.

3,628,832

CHAIR CONSTRUCTION

Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.

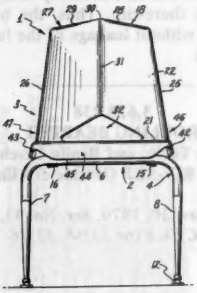
Filed Feb. 10, 1969, Ser. No. 797,949

Int. Cl. F16m *11/20*; A47c *7/00*

U.S. Cl. 297—451 **22 Claims**

The chair includes a base structure and a seat structure secured to the base. The base structure has pairs of downwardly extending legs connected by a horizontal portion. The horizontal portions are secured to each other by spaced apart pairs of angle bracket assemblies, with each

angle of a pair separated from the other to facilitate assembly. The seat structure includes an integrally molded seat-back shell mounted on a tubular frame having brackets which slip over and are secured to one of the angles of each



of the angle bracket assemblies. The seat structure is held to the base structure by machine screws so that the chair assembly can be shipped in a knocked-down condition and readily assembled after shipment. A tablet arm or desk arm can be secured to the chair if required. While the seat-back shell is molded from an essentially rigid plastic material, the construction is such that the back can deflect slightly relative to the seat to enhance comfort. The comfort of the shell is further enhanced by the upwardly curved seat, the buttocks relief opening in the back of the shell, and the shallow V-shaped spine relief along the back of the shell.

3,628,833

RIPPING MACHINE

Daniel P. Crispino, 451 Fawcett St., Baltimore, Md.

Filed June 4, 1970, Ser. No. 43,387

Int. Cl. E04d *15/00*

U.S. Cl. 299—36 **6 Claims**

An improved roof-ripping machine having a tractor is provided which is used to thrust along the surface of a roof deck to break loose and remove old roofing paper from a roof. The machine, in addition to the tractor, consists of a ripping head having a fork assembly and a hinged shield. The fork assembly is provided with a plurality of tapered teeth to break loose and remove the roofing paper when driven forward by the tractor.

3,628,834

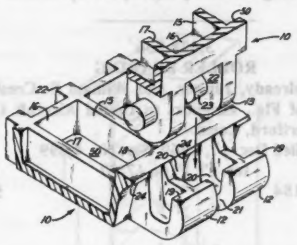
LINK MEMBERS AND ENDLESS CHAINS ESPECIALLY FOR TRACKED VEHICLES

Howard A. Anderson, Pittsburgh, Pa., assignor to Baychem Corporation, New York, N.Y.

Filed Sept. 3, 1969, Ser. No. 855,009

Int. Cl. B62d *55/28*

U.S. Cl. 305—35 R **6 Claims**



One-piece molded plastic link members which are easily assembled and disassembled into endless chains or treads of easily replaceable link members and in which disassembly can occur only at a time that adjacent linked members are placed in a relationship not occurring during normal operation of the endless chain or tread is disclosed. The one-piece molded link members of this invention are particularly suitable and adaptable for forming endless chains or treads to be used on tracked vehicles such as snowmobiles or the like. The molded link members are characterized by being adapted for coupling with an identical link member without distortion of either member by engaging a male portion of one link member in an oppositely placed female portion of an adjoining link member.

3,628,835

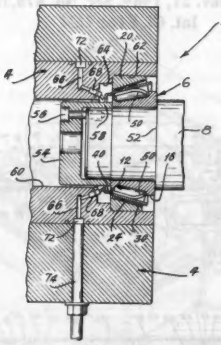
HIGH-SPEED TAPERED ROLLER BEARING

Robert Franklin Cornish, 722 Edgewood St. S.E., North Canton, Ohio, and Robert Lee Leibensperger, 4731 Woodside Ave. N.W., Canton, Ohio

Filed Oct. 5, 1970, Ser. No. 78,078

Int. Cl. F16c *33/66, 19/14*

U.S. Cl. 308—187 **17 Claims**



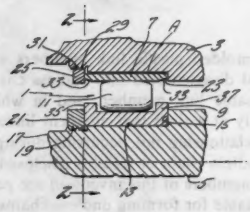
A tapered roller bearing has an annular lubricant collector trough connected to the small diameter end of the cage in which the tapered rollers are contained. The open side of the trough is presented toward the axes of rotation, while the op-

posite side communicates with the inner ends of distribution tubes which extend between adjacent rollers. The opposite or outer ends of the distribution tubes are directed toward the cone thrust rib against which the large diameter ends of the rollers bear for axially positioning the rollers. When a lubricating oil is introduced into the open side of the collector trough, the lubricant is scooped up and forced to flow into the distribution tubes and from there the lubricating medium issues from the outer ends of the tubes and flows against the cone thrust rib, thereby lubricating this critical surface even during extremely high-speed operation.

3,628,836
ROLLER BEARING

Richard C. Mulready, Jupiter, and William E. Creslein, III, Juno, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 17, 1969, Ser. No. 4,499
Int. Cl. F16c *17/00*
U.S. Cl. 308—184 **5 Claims**

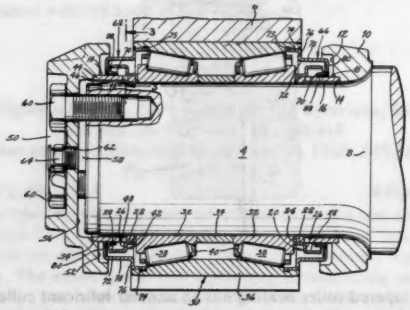


A shaft is mounted in a housing by a roller bearing assembly. This assembly comprises an inner race, rollers, and an outer race. A tight or negative fit exists between the inner race, rollers, and outer race around the entire circumference of the assembly. The inner race is fixed to the shaft and includes side rails extending therefrom which are spaced from the ends of the rollers. The outer race is thin and mounted in the housing so that it can flex under roller load and provide damping. A nut provides for varying the compressive force on the outer race if desired.

3,628,837
BEARING ASSEMBLY HAVING FLEXIBLE LABYRINTH ENCLOSURES

Dennis L. Otto, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Nov. 21, 1969, Ser. No. 878,700
Int. Cl. F16c *1/24*
U.S. Cl. 308—187 **5 Claims**

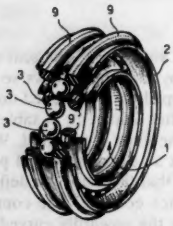


A bearing assembly includes a tapered roller bearing having a cup from which labyrinth type enclosures extend. The enclosures include cases attached to the cup and flexible labyrinth elements which are bonded to and project into the interiors of the cases where they encircle enclosure rings positioned adjacent to the cones of the bearing. The enclosures normally do not engage the rings, but when a pressurized lubricant is introduced into the cases and surrounds the inwardly projecting portions of the elements, those portions of the elements will flex inwardly and bear against the rings, forming seals therewith. Thus, the bearing assembly can be relubricated without leakage of the lubricant past the labyrinth enclosures.

3,628,838
ROLLING BEARING

Domenico Camosso, Turin, and Benito Lescio, Rivoli, both of Italy, assignors to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Nov. 20, 1970, Ser. No. 91,245
Int. Cl. F16c *33/58, 33/76*
U.S. Cl. 308—188 **12 Claims**

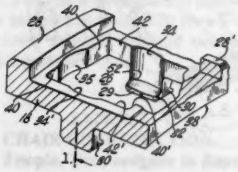


A rolling bearing such as a ball bearing has inner and outer imperforate races each of which is W-shaped in cross section so as to provide a pair of grooves on whose confronting faces the balls roll. The balls completely fill the races, and rubber sealing rings may be positioned in the radially outwardly opening grooves of the outer race and/or the radially inwardly opening grooves of the inner race and/or between the races adjacent their edges.

3,628,839
ROLLER BEARING RETAINER

James L. Vannest, New Britain, Conn., assignor to Textron Inc., Providence, R.I.

Filed Nov. 25, 1968, Ser. No. 778,684
Int. Cl. F16c *33/46*
U.S. Cl. 308—217 **6 Claims**



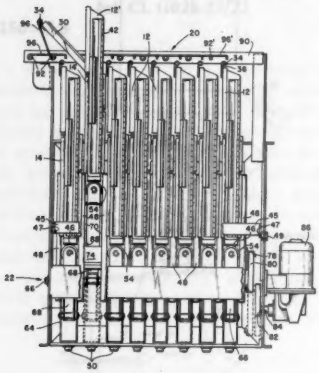
Roller-bearing retainer rings are described wherein lubricating concavities are formed in the sides rimming roller element pockets. An economical machining method of manufacturing such retainer rings is described wherein the roller pockets and lubrication concavities are conveniently machine formed simultaneously with radially recessed roller supports.

3,628,840

AUTOMATIC DISPENSER AND STORAGE DEVICE FOR SHEET FILM

Stephen J. Wenthe, and Charles F. Shute, both of Rochester, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,031
Int. Cl. A47f 4/00
U.S. Cl. 312—35 13 Claims



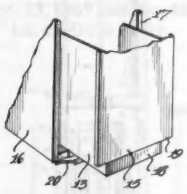
An automatic dispenser for sheet material includes a magazine having a plurality of carriers, each carrier being adapted to receive a cartridge-containing sheet material. The magazine further includes a lifting device for raising a selected carrier and its associated cartridge and means responsive to upward movement of a carrier for opening an access door on the associating cartridge to permit withdrawal of a sheet carried therein.

3,628,841

REFUSE COMPACTOR CABINET STRUCTURE

Charles E. Sulcek, Stevensville, Mich., assignor to Whirlpool Corporation

Filed Oct. 31, 1969, Ser. No. 872,896
Int. Cl. A47b 17/04, 97/00, 88/00
U.S. Cl. 312—204 8 Claims



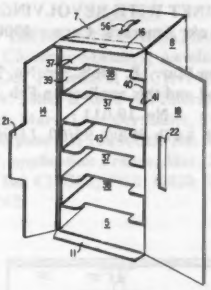
A refuse compactor having a drawer which is movable through a front wall of a cabinet selectively between an inner compacting position and an outer loading position. The cabinet is provided with a toe plate defining the lowermost portion of the front wall. The toe plate remains connected at the front of the cabinet at all times but is movable to permit a lowermost portion of the drawer to move through the space occupied by the upper portion of the toe plate in its normal upright position, thereby permitting the drawer to include usable compaction space below the level of the top of the toe plate.

3,628,842

SHIPPING AND DELIVERY SHELVED CONTAINERS FOR FOOD

Ernest C. Wright, Princeton, N.J., assignor to Union Camp Corporation, Township of Wayne, N.J.

Filed Apr. 21, 1970, Ser. No. 30,437
Int. Cl. A47b 43/02
U.S. Cl. 312—259 3 Claims



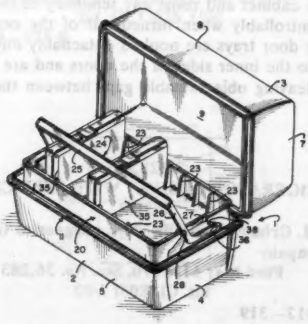
A container is erected from a prescored blank to form a carton having a top, sides, a bottom and closure panels for the front and rear thereof. A removable separable shelving assembly is formed by securing a shelf or shelves to side rails. The shelving assembly is inserted as a unit into the erected carton whereby a shelved container is formed. The top of the container is provided with handle means, and the front and rear closure panels are provided with locking tab means, whereby a closed, shelved container is provided for shipping, storage and delivery services.

3,628,843

CONTAINER FOR FISHING TACKLE OR THE LIKE

Donald T. Wynne, Cleveland, Ohio; David E. Workman, Los Angeles, Calif., and Joseph W. Kneier, Chesterland, Ohio, assignors to Pendleton Tool Industries, Inc., Los Angeles, Calif.

Filed Nov. 7, 1969, Ser. No. 874,774
Int. Cl. A47b 57/24
U.S. Cl. 312—294 8 Claims



A container for carrying fishing or hunting supplies or for use as a tool box, sewing chest or various industrial uses. A

large container or case is provided with supports on which a tray is removably mounted. The tray is provided with divider ribs which are adapted to hold small articles containers. A handle is pivotally mounted on the tray and serves to assist in the removal of the tray from the container and to prevent the small article containers from becoming jumbled when the container is closed. The supports for the tray are spaced from the bottom of the box so that large articles may be carried in the box below the tray.

3,628,844

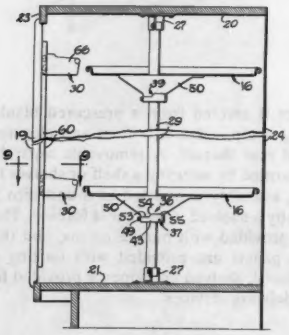
STORAGE CABINET WITH REVOLVING SHELVES

Bruce A. Preston, c/o Amerock Corp., 4000 Auburn St., Rockford, Ill.

Original application Mar. 18, 1968, Ser. No. 713,820, now abandoned. Divided and this application Feb. 9, 1970, Ser. No. 10,011

Int. Cl. A47b *88/00, 95/00, 11/00*

U.S. Cl. 312—305 **3 Claims**



Mounted within a square storage cabinet is a tier of revolving shelves each shaped generally as a three-quarters circle having a diameter approximately equal to the square dimension of the cabinet to avoid wasted space in the cabinet. Each shelf is formed with one straight edge located to enable tiers of trays attached to two swinging cabinet doors to be made of an optimum depth permitting the trays to fill the space between the shelves and the doors when the latter are closed. Detent mechanisms hold the shelves in centered positions within the cabinet and resist any tendency of the shelves to spin uncontrollably when turned out of the centered positions. The door trays are hooked detachably onto standards fastened to the inner sides of the doors and are constructed to avoid leaving objectionable gaps between the doors and the trays.

3,628,845

REFRIGERATOR CABINET WITH SELF-CLOSING DOOR

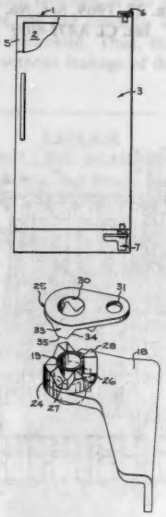
Bernard J. Grimm, Louisville, Ky., assignor to General Electric Company

Filed May 11, 1970, Ser. No. 36,283

Int. Cl. E05f *1/02*

U.S. Cl. 312—319 **1 Claim**

A refrigerator cabinet having an access opening and a door for closing the access opening is provided with a hinge construction assuring the self closing of the door from a substantially open position and the positive sealing of the door gasket with the cabinet base as the door approaches its closed position. In accordance with the preferred embodiment of the invention, the hinge construction also includes means for positioning the door in a predetermined open position as for example at an angle of 90° with the face of the cabinet.



3,628,846

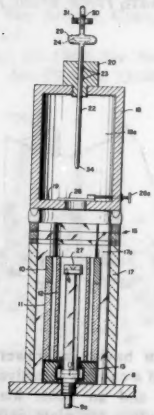
METHOD OF MAKING A VAPOR DISCHARGE LAMP

Salvatore Cortorillo, West New York, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Original application July 11, 1967, Ser. No. 652,556, now abandoned. Divided and this application Mar. 1, 1970, Ser. No. 23,116

Int. Cl. H01j *9/18*

U.S. Cl. 316—19 **9 Claims**



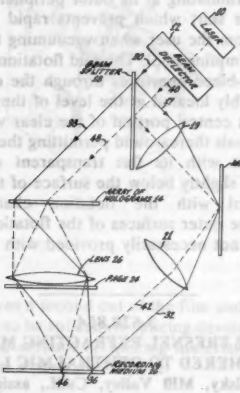
A metal vapor discharge lamp and method of making the same in which the lamp comprises a partially evacuated translucent ceramic tube containing a charge of metal and a starter gas and hermetically sealed at either end by means of a suitable end cap and electrode assembly which does not have an exhaust tubulation. According to the method of

manufacture the evacuation of impurities and residual gases from the lamp and the introduction of the starter gas into the lamp is carried out in the same environment as the sealing of the end cap and electrode assemblies to the ends of the translucent ceramic tube.

3,628,847
HOLOGRAM MEMORY

David Ira Bostwick, Mercer, N.J., assignor to RCA Corporation

Filed Sept. 5, 1969, Ser. No. 855,676
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **4 Claims**

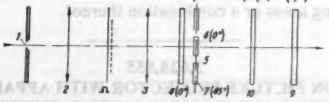


An array of holograms, each representing many light sources, is employed during the write operation. When one of these holograms is illuminated by a laser beam, the reconstructed light sources of that hologram illuminate a corresponding number of memory locations of a "page" of data. The light from the page then is focused onto a small area of a recording medium. A reference beam from the same laser concurrently is directed at this same small area to cause to be "written" there a hologram of the page.

3,628,848
VARIABLE PHASE CONTRAST MICROSCOPY

Georges Nomarski, Bourg la Reine, France, assignor to Etablissement Public: Agence Nationale de Valorisation de la Recherche "ANVAR", Hauts-de-Seine, France

Filed Dec. 23, 1969, Ser. No. 887,621
Int. Cl. G02b *27/28*
U.S. Cl. 350—13 **8 Claims**



In phase contrast microscopy, the phase plate is broken down into two zones, the conjugate and complementary zones, the light beam is polarized in two directions inclined relatively at 45°. One polarization affects the conjugate zone; the other polarization affects the complementary zone, without optical path delay. The apparatus employs a polarizer, a phase plate, a birefringent compensator, and an analyzer having a phase plate with two polarizers turned 45° and respectively occupying the conjugate zone and the complementary zone of the plate. One polarizer is positioned in front of the plate so it covers the two zones and is parallel to the polarizer at the conjugate zone. The birefringent compensator and analyzer are mounted behind the plate, in the direction of light propagation, so that the transmissions of complex amplitudes of the conjugate zone will be $1\text{-}e^{i}$ and that of the complementary zone will be 1.

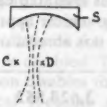
ERRATA

For Classes 350—96 WG and 350—289 see:
Patent Nos. 3,628,861 and 3,628,862

3,628,849
DIFFRACTION GRATINGS

Jean Flamand, Chatenay Malabry; Antoine Labeyrie, Gif sur Yvette, and Guy Pieuchard, St-Cyr-l'Ecole, all of France, assignors to A. Jobin & G. Yvon Instruments De Precision, Arcueil (Val de Marne) rue Berthollet, France

Filed June 13, 1969, Ser. No. 833,122
Claims priority, application France, Mar. 26, 1969, 6908883
Int. Cl. G01j *3/18*; **G02b** *5/18*
U.S. Cl. 350—162 **3 Claims**

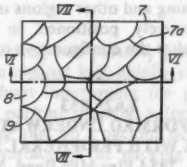


The invention relates to new gratings constituted by a support bearing on a sensitive face the grooves of the gratings which are located at the intersection of the said face of the support by a family of surfaces geometrically such as the equiphase surfaces obtained as loci of the maxima of luminous intensity upon the interference of two beams originating from two point sources. These gratings may be realized by holography, by using as sensitive layer a layer of a photopolymerizable resin, the best results being obtained with a layer of thickness smaller than approximately 2 microns. These gratings are useful for the realization of new or improved spectrographic devices.

3,628,850
CORRECTING LENS

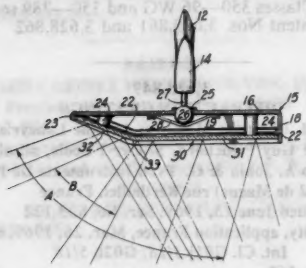
Eiichi Yamazaki, Ichihara; Kooichi Maruyama, Mobara, and Iwao Ogura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1970, Ser. No. 13,640
Int. Cl. G02b *3/00*
U.S. Cl. 350—175 R **10 Claims**



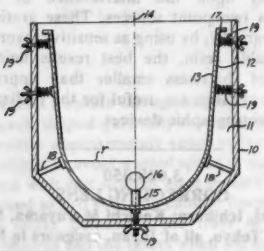
A correcting lens for use in the formation of fluorescent dots on a color picture tube, which has its effective surface divided into a plurality of sections each of which consists of a flat or curved surface as designated and at least one of which has borderlines of discontinuity in at least two directions.

3,628,851
WIDE ANGLE REAR VIEW MIRROR
Harry J. Robertson, Woodland Road, Salisbury, Md.
Filed Aug. 22, 1969, Ser. No. 852,194
Int. Cl. G02b 5/10
U.S. Cl. 350—293 1 Claim



A rear view mirror for mounting on a vehicle, the mirror having two planar mirror sections joined by an arcuate section so that a vehicle approaching the rear of the driven vehicle on which the mirror is mounted can be observed continuously as the approaching vehicle approaches the driven vehicle with the mirror until it is abreast of the driven vehicle.

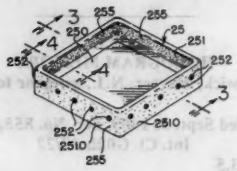
3,628,852
ADJUSTABLY POSITIONABLE REFLECTORS
Alvin A. Snaper, Las Vegas, Nev., and Frank C. Farrell, Los Angeles, Calif., assignors to Advanced Patent Technology, Inc., Las Vegas, Nev.
Filed Mar. 23, 1970, Ser. No. 21,590
Int. Cl. G02b 5/10
U.S. Cl. 350—295 4 Claims



A reflector assembly in accordance with the present disclosure comprises a deformable reflector mounted within a housing by an adjustablemounting means. The adjusting mounting means is capable of selectively adjusting the configuration and position of the reflector in the housing. Preferably, at least one region of the reflector is fixedly positioned with the housing and other regions of the reflector are independently selectively positioned in the housing to thereby selectively alter the configuration of the reflector.

3,628,853
INTEGRALLY FORMED UNDERWATER VIEWING DEVICE WITH PERIPHERAL SKIRT
Gordon W. Stoscup, 7854 Five Mile Road, Northville, Mich.
Filed July 30, 1970, Ser. No. 59,527
Int. Cl. G02b 5/00
U.S. Cl. 350—319 5 Claims

A clear view device for use when vacuuming the bottom or walls of a swimming pool when filled with water which eliminates glare and provides a clear view of the particular area of the swimming pool being cleaned. The said clear view device comprises a flat transparent central portion floating substantially on the surface of the water in the swimming pool provided with an elevated flotation chamber



therearound terminating at its outer periphery in a continuous underwater skirt which prevents rapid floating of the device away from the user when vacuuming the bottom and walls of the swimming pool. The said flotation chamber has a plurality of air-bleed apertures through the outer periphery thereof preferably located at the level of the top of the said flat transparent central portion of the clear view device and spaced at intervals therearound permitting the said clear view device to float with its flat transparent central portion disposed on or slightly below the surface of the water in the swimming pool with the flotation chamber disposed thereabove. The outer surfaces of the flotation chamber are preferably but not necessarily provided with a nonglare surface.

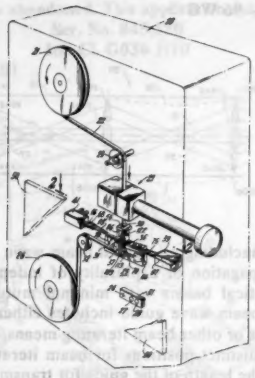
3,628,854
FLEXIBLE FRESNEL REFRACTING MEMBRANE ADHERED TO OPHTHALMIC LENS
Arthur Jampolsky, Mill Valley, Calif., assignor to Optical Sciences Group, Incorporated, San Francisco, Calif.
Continuation of application Ser. No. 647,533, June 20, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 878,975
Int. Cl. G02c 7/08, 7/14, 7/16
U.S. Cl. 351—175 7 Claims

A thin, fully conformable, plastic membrane which can be applied, and made to adhere with finger pressure, to spectacle lenses for quickly and impermanently changing one or more optical characteristics of the spectacle lenses. The membrane may be embossed on one of its surfaces to form a Fresnel-type lens or prism structure to introduce a deviation of the light ray, may be partially or entirely tinted to pass only certain wavelengths of light, may be diffused, or blurred uniformly or differentially, may have selective opaqued or transmitting areas or a combination thereof.

3,628,855
MOTION PICTURE PROJECTOR WITH APPARATUS FOR EDITING AND SPLICING MOTION PICTURE FILM
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 3, 1970, Ser. No. 8,194
Int. Cl. G03c 11/00
U.S. Cl. 352—130 31 Claims

A motion picture projector is provided which includes editing and splicing apparatus located between the projector film gate and the film takeup reel. Upon a first operation of the apparatus, a frame counter activates the film transport claw to advance a predetermined number of frames from the film gate to a cutting member, which makes a first cut of the

film and directs the leading end of the portion of the film to be removed toward a festoon chamber. Upon a second operation of the apparatus, the frame counter again activates the film transport claw to advance the predetermined number of frames from the film gate to the cutting member,



which then makes a second cut of the film and aligns the film ends remaining to be spliced. A splicing device then transfers a predetermined amount of splicing material to the aligned film ends to form a permanent splice.

3,628,856

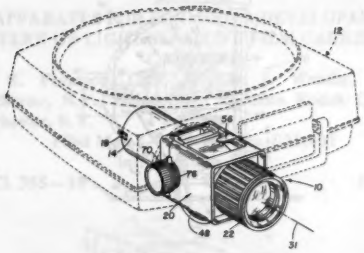
FILMSTRIP ADADPTER FOR SLIDE PROJECTORS

Vernon H. Jungjohann; Henry S. Adamski, both of Rochester, N.Y., and Stephen M. Richardson, Acton, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,909

Int. Cl. G03b *21/00, 23/00*

U.S. Cl. 353—68 **5 Claims**



A slide projector adapter for showing still pictures from a filmstrip includes a film gate and a drive sprocket adjacent the film gate. The adapter may be used to show long or short films, with or without leaders. The filmstrip is fed from a molded supply spool to a spring-biased takeup spool. A condenser tube is aligned with the film gate for insertion into the light projecting tube of the projector. The adapter is held in such a manner that it can be rotated to accommodate either horizontal or vertical film formats. A film advance mechanism includes a device for precisely framing the initial projected image.

3,628,857

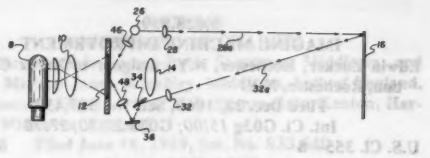
FULLY AUTOMATIC FOCUSING PROJECTOR

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,695

Int. Cl. G01b *3/00, 21/14*

U.S. Cl. 353—101 **10 Claims**



A projector having an optical ranging system for automatically optically sensing the screen-to-lens distance and in response thereto establishing the proper film-to-lens distance for placing a film image in focus. The projector further has an optical focusing system which may include parts of the optical ranging system for maintaining the established film-to-lens distance in the projector and the film image in focus. Initially, the optical ranging system is enabled to sense the screen-to-lens distance and in response thereto to establish the proper film-to-lens distance for proper focus while the optical focusing system is disabled. The positioning of a film in the projection position disables the optical ranging system and enables the optical focusing system to maintain the established film-to-lens distance. Additional zoom mechanism may be provided to automatically maintain an illuminated viewing area on the screen of a predetermined size regardless of the size of the film area being projected.

ERRATUM

For Class 353—101 see:
Patent No. 3,628,862

3,628,858

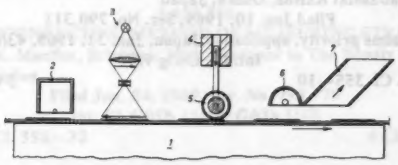
COMBINED PACKING AND PARTIALLY PRINTING OF PACKING MATERIAL

Hans Hermann Dittner, Auf der Hardt 7, 5161 Obermaubach, Germany

Filed July 22, 1969, Ser. No. 843,359

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **11 Claims**



A combined packing and partially printing system is utilized to produce a desired individually varying print on any packing unit without interrupting the packing process by which a blank of packing material is formed to any desired shape of a packing unit, on a packing device and then filled with goods. The surface of the packing material is at least partially print-coated with a layer of a photoconducting substance or blend of substances prior to being introduced into the packing device for being folded and set into the desired shape. The packing device is combined with a charging unit including means for variably adjusting the length and width of the area to be charged of the photoconducting layer on the packing material. A photographic unit is present for exposing the charged photoconducting layer by light allowed to

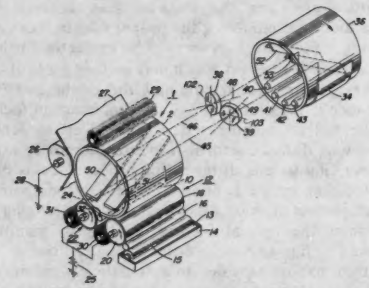
pass through any desired character of a matrix, and a developing unit in combination with a fixing unit serve to produce the desired images of said characters at the desired partial sections of the surface of said packing material under processing. In this manner variable imprints can be applied to any desired quantity of packing units without the packing process being interrupted.

3,628,859

IMAGING MACHINE IMPROVEMENT

Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,452
Int. Cl. G03g *15/00; G03b 27/50, 27/70*
U.S. Cl. 355—8 **8 Claims**



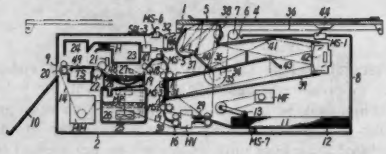
Method and apparatus for forming registration errors in multiple slit scanning optical systems by repositioning the lens of the system in a plane perpendicular to its axis to shift the projection in the image plane. By shifting the optical systems to eliminate or bias a registration error between multiple slit scan optical systems, a minimization of slit errors are accomplished.

3,628,860

HEAT-FUSING APPARATUS IN ELECTROSTATIC COPIER

Masaya Ogawa, Osaka, Japan, assignor to Minoltacamera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 10, 1969, Ser. No. 790,311
Claims priority, application Japan, Jan. 31, 1968, 43/6460
Int. Cl. G03g *9/04*
U.S. Cl. 355—10 **3 Claims**



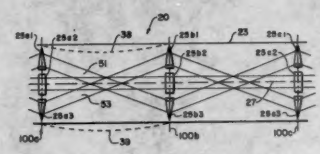
A copying apparatus is provided in which an image-fixing hot air blower normally has a heating unit maintained at a lower temperature by thermostatic means in the image-fixing area with an overriding control circuit bypassing the thermostat means in response to initiation of a copying cycle to increase the temperature of the heating element to its operating range.

3,628,861

MULTIBEAM OPTICAL WAVE TRANSMISSION

Georg J. E. Goubau, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 4, 1969, Ser. No. 855,064
Int. Cl. G02b *27/00*
U.S. Cl. 350—96 WG **7 Claims**



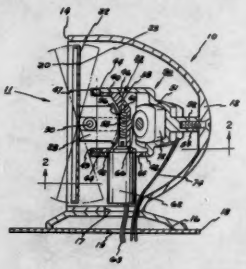
A system including an optical beam wave guide for simultaneous propagation of a plurality of independent spatially coherent optical beams with minimal mutual interference; the optical beam wave guide includes either (1) a series of spaced lenses or other beam iterating means, one at each of a plurality of distinct positions for beam iteration (reconstitution) along the length of the guide for transmitting simultaneously all of the optical beams, (2) an array of separate optical elements at each iteration position, each element of a given array passing only one of said optical beams, or (3) a combination of the aforesaid arrangements wherein a set of M optical elements is used at each iteration position and each of the M optical elements is designed to transmit a group of N beams so that the total number of transmitted beams is MN.

3,628,862

POWER ACTUATED REARVIEW MIRROR

Robert L. Stephenson, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,779
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **6 Claims**



A power actuated outside rearview mirror assembly, particularly for a motor vehicle, comprising a mirror housing in which is mounted a stationary yoke member which supports a motor having an output shaft to which is fixed a worm gear adapted to mesh with a sector gear formed on the rear of a second yoke member, pivotally supported within the stationary yoke member and attached to the rear of a mirror for angular movement of the mirror in one direction. The second yoke member supports another motor having an output shaft to which is fixed a worm gear adapted to mesh with another sector gear disposed within the second yoke member which is similarly connected to the rear of the mirror for angular movement of the mirror in another direction. The last named motor extends through an elongated opening in the stationary yoke member for relative movement therein upon adjustment of the mirror in a first angular direction.

3,628,863

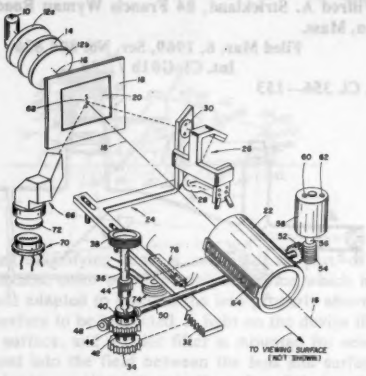
REMOTE FOCUSING OVERRIDE MECHANISM FOR AN AUTOMATIC FOCUSING PHOTOGRAPHIC PROJECTOR

Franklin D. Kottler, and Frederick K. Leutung, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 648,264, June 23, 1967, now abandoned. This application July 28, 1969, Ser. No. 845,350

Int. Cl. G03b 3/10

U.S. Cl. 353—101 9 Claims



A remote focusing mechanism for a projector for overriding the automatic focusing system which automatically maintains a projected slide image in focus by maintaining a constant focal or spatial distance between a film and a film image projection lens regardless of shifting or displacement of the film along the optical path. In the event the automatic focusing system does not achieve an optimum focused film image, such optimum focused image is achieved by the remote focusing mechanism by disabling the automatic focusing system, arresting movement of the radiation focusing lens, and moving the film image projection lens alone relative to the radiation focusing lens.

3,628,864

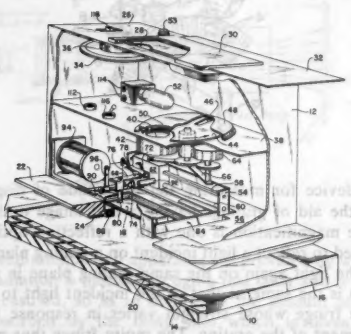
APPARATUS FOR FORMING A DEVELOPABLE PATTERN ON LIGHT-SENSITIVE FILM CARRIED IN A CASSETTE

John R. Fessenden, and Stephen J. Wenthe, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1969, Ser. No. 821,401

Int. Cl. G03b 27/32

U.S. Cl. 355—18 10 Claims



Apparatus for forming a developable pattern on a light-sensitive film carried in a cassette having an openable window, the marking apparatus including a mechanism for holding the cassette in a predetermined position, a device for opening the window, a support for prepared data, and means for optically projecting an image of the data through the window onto the film in the cassette. The apparatus may also be provided with electrical switch means for preventing its operation if the cassette is not properly received therein.

3,628,865

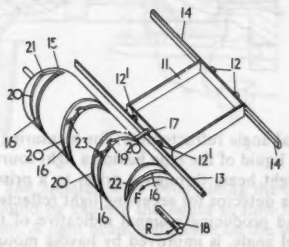
POSITIONING MECHANISM

Harry Arthur Hele Spence-Bate, Stanmore, Middlesex, and John Michael Jones, Wembley, Middlesex, both of England, assignors to Harry Arthur Hele Spence-Bate, Kenton, Harrow, Middlesex, England

Filed June 16, 1969, Ser. No. 833,640

Int. Cl. G03b 27/42

U.S. Cl. 355—53 9 Claims



A positioning mechanism primarily for aligning a photographic film held in a movable frame, particularly applicable to microphotography where a high degree of accuracy is required, comprising a notched camway wherein the notches provide fine alignment for a coarser aligning means, these notches may be in a camway formed helically around a roller, a cam follower is provided linked to the frame and cooperating with the notches, the cam follower can be driven by the camway so that by turning the roller one way the frame is moved forward and turning the frame the other way the frame can be positioned, methods of reversing the travel of the frame at a preselected stage can be provided.

3,628,866

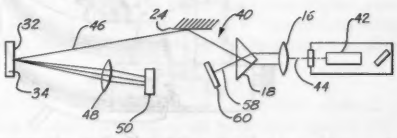
NONCONTACTING METHOD OF MEASURING STRAIN

Rolf K. Mueller, Brighton, Mich., assignor to The Bendix Corporation

Filed Jan. 24, 1969, Ser. No. 793,779

Int. Cl. G01b 11/16; G02b 5/10

U.S. Cl. 356—32 4 Claims

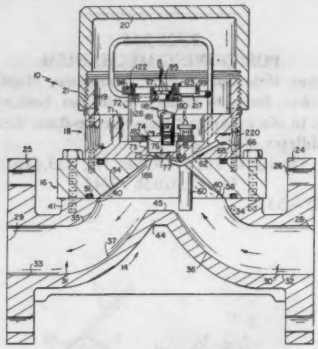


A noncontacting method for measuring strain in a workpiece wherein strain measurements are based on an optical diffraction grating produced by interfering beams from a giant-pulse laser thereby enabling the thermal engraving of diffraction gratings on irregularly shaped surfaces.

3,628,867
REFRACTOMETER

Tyson H. Brady, Bellingham, Mass., assignor to Anacon, Inc., Ashland, Mass.

Filed Aug. 20, 1969, Ser. No. 851,638
Int. Cl. G01n 21/46
U.S. Cl. 356—136 20 Claims

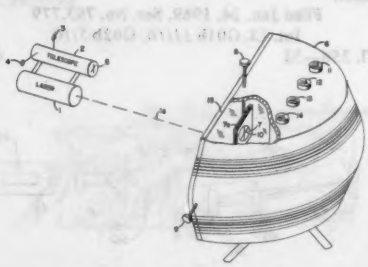


A critical angle refractometer for measuring the refractive index of a liquid of the type having a light source arranged to direct a light beam through a prism to a prism-liquid interface, and a detector for receiving light reflected from the interface and producing a signal indicative of the position of the critical angle, is improved by having mounting structure providing linear guides spaced from the prism and extending substantially parallel to the outer surface of the prism, a carrier member for the detector, and adjusting means for moving the carrier member along the guides, thereby moving the detector in a path substantially perpendicular to the mean reflected light path from the prism. Where moving streams are being monitored, structure is provided for directing the stream at and away from the prism face at acute angles thereto and establishing a continuously moving liquid stream across the prism face therebetween. A novel sample-type refractometer is also described.

3,628,868
LASER BORESIGHTING METHOD AND APPARATUS

George W. Starkey, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 9, 1969, Ser. No. 856,410
Int. Cl. G01b 11/26
U.S. Cl. 356—152 3 Claims

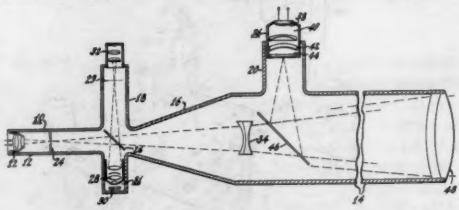


A telescope having crosshairs is mounted on the housing of a laser. In order to boresight this telescope to the laser, a parabolic reflector with a four-quadrant photodetector mounted at its focus is provided. The detector has its quadrants defined by surface crosshairs, and is physically adjustable about the axis of the reflector. Microammeters are connected to show the current provided by each quadrant of the photodetector. In use, the reflector is placed in the beam of a laser, and the photodetector is physically adjusted until all microammeters show the same reading. The laser telescope is then adjusted to have its crosshairs align with the image of the crosshairs of the photodetector.

3,628,869
AUTOCOLLIMATOR INCLUDING A RETROFLECTOR ELEMENT

Burton R. Clay, 55 Sedgemeadow Road, Wayland, Mass., and Wilfred A. Strickland, 84 Francis Wyman Road, Burlington, Mass.

Filed Mar. 6, 1969, Ser. No. 804,836
Int. Cl. G01b 11/26
U.S. Cl. 356—153 5 Claims

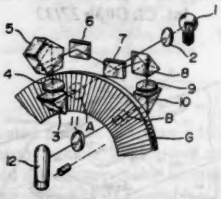


A collimator is disclosed which may be energized by a light source such as a laser and which includes means having a large field of view for expediting the finding of the light reflected from a reflecting surface to be oriented. The collimator includes means having a small field of view for making final adjustments in orienting the reflector, there being no moving parts in or between these two means. A built-in, sturdy reference device is provided which is independent of small errors in adjustment of parts of the collimator.

3,628,870
DEVICE FOR MEASURING AMOUNT OF DISPLACEMENTS WITH AID OF GRATINGS

Yoshisada Hayamizu, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation of application Ser. No. 697,175, Jan. 11, 1968, now abandoned. This application July 2, 1970, Ser. No. 56,114
Int. Cl. G01b 11/26
U.S. Cl. 356—170 5 Claims



A device for measuring the magnitude of displacements with the aid of gratings having a real image optical system whose magnification is one with a reflection optical system adapted to reflect a light incident on a grating plane and project the light again on the same grating plane in a direction which is the same as that of the incident light to produce a moire fringe whose strength varies in response to the displacement of the grating. The moire fringe thus produced is observed to measure the amount of displacement of the grating. An elongated grating is used in case of measuring a

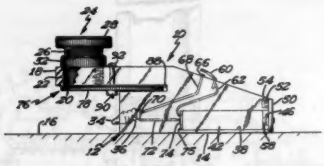
linear displacement of the grating, while a radial grating is used in case of measuring an angular displacement of the grating.

3,628,871

OPTICAL COLOR PRINTING ANALYSIS DEVICE AND METHOD

Anders B. Himmelstrup, 2368 Bourne Ave., St. Paul, Minn.

Filed Oct. 6, 1969, Ser. No. 863,859
Int. Cl. G01j *3/48*; B41f *15/00*
U.S. Cl. 356—189 **14 Claims**



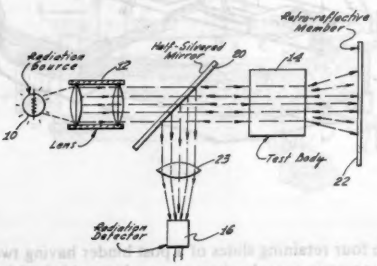
An optical magnifying lens is mounted as part of a manually portable color printing analysis device which has support means adapted to position the lens properly above a color print surface to be inspected. A light on the device illuminates the surface, and a color filter is mounted for selective movement into the field between the lens and surface. The filter color is complementary to the color of that part of the surface to be checked. For example, a blue filter is provided for inspection of yellow printed surfaces. Preferably one or more such color filters are mounted on a filter plate movably supported on a body portion of the device, which body portion also serves as a handle and battery case. Inspection of the surface through the magnifying lens and filter provides an enlarged dark contrast image of the desired color printed areas, such as the colored dot portion of a colored halftone sheet, even though some of the colors to be inspected are partially overprinted by other colors.

3,628,872

SPECTROPHOTOMETRIC TEST APPARATUS AND METHOD EMPLOYING RETROFLECTIVE MEANS

Victor Eduardo Vasquez Miranda, Huntington Beach, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Nov. 6, 1969, Ser. No. 874,557The portion of the term of the patent subsequent to July 20, 1988, has been disclaimed.
Int. Cl. G01n *21/06*
U.S. Cl. 356—201 **8 Claims**



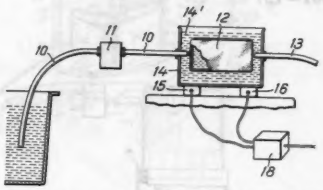
An improved method and apparatus are provided by which a selected radiation is passed through a test body and is subsequently measured, so as to determine the amount of the radiation absorbed by the body, and which involves the redirection of the radiation by retroreflective means through the test body directly back along its original path, prior to its detection by an appropriate radiation detector. In this way refraction effects due to flaws in the test body, which normally would direct random portions of the radiation away from the detector are cancelled, and the entire radiant beam is incident on the radiation detector despite such flaws.

3,628,873

METHOD OF CONTINUOUSLY DETERMINING THE DEGREE OF POLLUTION OF TRANSLUCENT LIQUIDS AND APPARATUS THEREFOR

Ernst Leitz, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Feb. 20, 1970, Ser. No. 13,058
Claims priority, application Germany, Feb. 22, 1969, P 19 08 904.4
Int. Cl. G01n *21/26*
U.S. Cl. 356—208 **5 Claims**



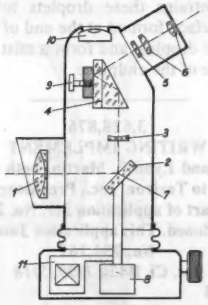
A method of and apparatus for determining the degree of pollution of a liquid by causing the liquid to flow through a transparent vessel. A light beam is directed on the vessel and the intensity of the light is measured after the beam has passed through or is reflected from the liquid. Ultrasonic pressure waves are applied to the vessel and the liquid therein for keeping the walls of the vessel clean from dirt particles which otherwise may accumulate thereon.

3,628,874

COMPACT OPTICAL SIGHTING LEVEL WITH INTERNAL FINE SETTING OF THE HORIZONTALITY OF THE LINE OF SIGHT

Luc A. Tagnon, Saint-Mande, France, assignor to Societe Des Lunetiers, Paris, France

Filed Mar. 5, 1970, Ser. No. 16,872
Claims priority, application France, Mar. 12, 1969, 6906971
Int. Cl. G01c *9/12*, *9/24*
U.S. Cl. 356—249 **4 Claims**



An automatic optical sighting level comprising a lens system, a mirror controlled by the vertical and disposed at a distance F/2 from said lens system, for reflecting the incoming light beam in a vertical direction, a conventional-type divergent vehicle movable along the vertical, a cross-wire and an observation eyepiece, characterized in that a fixed Abbe prism from which the last 60° reflection has been cut off is interposed between said vehicle and said cross-wire, so that it will eventually reflect the light beam along an axis

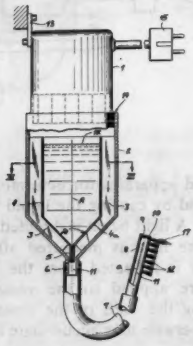
inclined by 30° above the horizontal. The mirror is controlled for vertical alignment by adjusting same with the assistance of an air-bubble or spirit-level rigid with the support of said mirror, whereby a relatively rapid level measurement can be effected by simply bringing the instrument rapidly into an approach or rough sighting position by centering the bubble of a spherical level.

3,628,875

SPRAYING DEVICE WITH HAND-HELD SPRAYING HEAD

Walter J. Wild, Zahringer Platz 21, 775 Constance (Bodensee), Germany

Filed Oct. 16, 1969, Ser. No. 866,824
Claims priority, application Japan, Oct. 17, 1968, P 18 03 541.1
Int. Cl. A46b *11/04*
U.S. Cl. 401—137 7 Claims



An axial blower is mounted on a wall, and a housing having a frustoconical end portion with a tubular extension is removably threaded onto it. This extension carries a flexible tube whose free end is a spraying tip or head in the form of a blind tube with a lateral orifice. Spaced coaxially within the housing by several axially extending vanes is a cylindrical liquid receptacle having a frustoconical end portion with a tubular extension of small fluid-flow cross section extending into the housing extension. The blower exerts pressure on the liquid in the receptacle to drive it through the constriction at the bottom of the receptacle, an airstream flowing around the receptacle entrains these droplets toward an impact (impingement) surface formed at the end of the handpiece to atomize the larger droplets and form a mist which is ejected through the orifice of the endpiece.

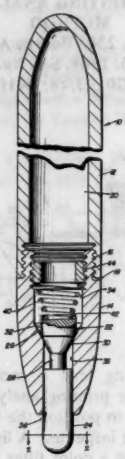
3,628,876

WRITING IMPLEMENT

Robert S. Casey, and Lynn P. Martin, both of Fort Madison, Iowa, assignors to Textron, Inc., Providence, R.I.

Continuation-in-part of application Ser. No. 244,196, Dec. 12, 1962, now abandoned. This application June 21, 1968, Ser. No. 754,161
Int. Cl. B43k *1/00, 5/18*
U.S. Cl. 401—198 6 Claims

The writing implement has a fluid reservoir, a rodlike applicator for conducting fluid from the reservoir to a writing surface and means supporting the applicator against axial movement under normal writing pressure. The applicator comprises a substantially continuous matrix of a wear-resistant, resilient, synthetic polymer having therethroughout a plurality of randomly disposed interconnected voids providing tortuous passageways of a size sufficient to permit capillary movement of a writing fluid therethrough upon contact of the point with the writing surface, the matrix having sufficient flexibility to permit resilient deformation of the point in engagement with the writing surface under normal writing pressure and having sufficient stiffness to maintain the forward end thereof in substantial axial alignment with the rearward end under normal writing pressure applied angularly to the point.

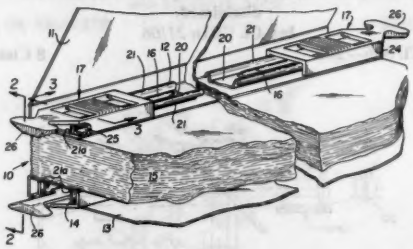


3,628,877

COMPRESSION MECHANISM AND POST BINDER INCORPORATING THE SAME

Frank Barnes, Jr., 59 Benson Ave., Sayville, N.Y.

Continuation-in-part of application Ser. No. 857,184, Sept. 11, 1969, now abandoned, Continuation-in-part of application Ser. No. 724,391, Apr. 26, 1968, now abandoned. This application Mar. 17, 1971, Ser. No. 125,074
Int. Cl. B42f *3/00*
U.S. Cl. 402—17 1 Claim



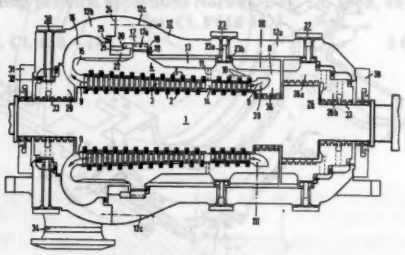
The four retaining slides of a post binder having two parallel compression mechanisms are each provided with an outwardly extending hook so that the binder can be vertically suspended in a file drawer or the like between suitably spaced horizontal supports. When the binder is removed from the file drawer for use, the retaining slides can be readily shifted along the compression members to retracted positions within the binder. The position of the flexible posts and the length of the slides are such that the slides retain the posts in both their extended and retracted positions.

3,628,878

MULTISHELL AXIAL TURBINE, PREFERABLY STEAM TURBINE FOR HIGH PRESSURES AND TEMPERATURES

Werner Trassel; Wilhelm Engelke, and Axel Remberg, all of Mulheim-Ruhr, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 2, 1969, Ser. No. 881,445
Claims priority, application Germany, Dec. 3, 1968, P 18 12 493.1
Int. Cl. F04d 29/40; F01d 1/00
U.S. Cl. 415—108 13 Claims



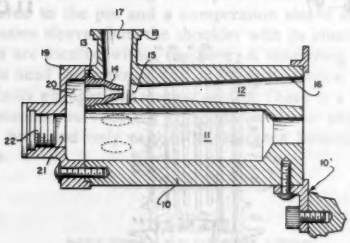
Multishell axial turbine includes a guide vane carrier divided in an axial plane, an inner casing surrounding the guide vane carrier, and an outer casing surrounding the inner casing, the inner casing being also divided in an axial plane and being structurally joined with the guide vane carrier into a single inner shell.

3,628,879

JET PUMP

Frank E. Marmon, Marietta, and Alan B. Shimell, Atlanta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 23, 1970, Ser. No. 5,252
Int. Cl. F04f 5/00
U.S. Cl. 417—176 4 Claims



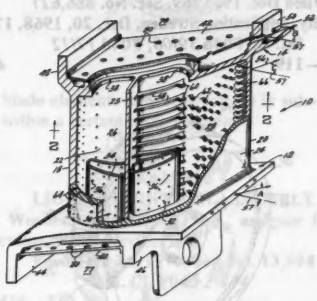
This jet pump comprises an ejector manifold adapted for connection between a single source of pressurized fluid and multiple scavenge lines from different fuel tanks or storage areas whereby all of the fuel is withdrawn from all such areas with the pressurized fluid for ultimate delivery to one or more engines. By using a common ejector manifold the duplication of parts, lines and fittings is held to a minimum and a more efficient scavenge system results.

3,628,880

VANE ASSEMBLY AND TEMPERATURE CONTROL ARRANGEMENT

Robert J. Smuland, Cincinnati; Ned A. Hope, Loveland, and James E. Sidenstick, Cincinnati, all of Ohio, assignors to General Electric Company

Filed Dec. 1, 1969, Ser. No. 881,254
Int. Cl. F01d 25/12, 5/08
U.S. Cl. 415—115 8 Claims



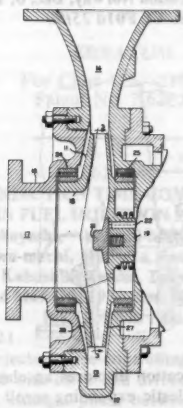
A gas turbine engine vane assembly of the type adapted for use in an annular row of such assemblies and having spaced inner and outer platform portions for defining an annular hot gas stream flow path and a hollow airfoil extending therebetween. The airfoil is compartmentalized by a bridge member extending between the airfoil sidewalls and an impingement insert is provided for each compartment. Chordwise extending structural ribs are provided internally of the airfoil to strengthen the sidewalls and impingement baffles are provided outwardly of the platform portions for temperature control of these elements. Passageways are provided through the platforms to direct coolant to the downstream edges thereof and into the hot gas stream at an angle approximating the hot gas swirl angle.

3,628,881

LOW-NOISE IMPELLER FOR CENTRIFUGAL PUMP

Arthur J. Herrmann, Jr., Batavia, Ill., assignor to General Signal Corporation

Filed Apr. 20, 1970, Ser. No. 29,842
Int. Cl. F04b 39/00; F04d 17/08, 29/26
U.S. Cl. 415—119 4 Claims



A practical scheme for reducing the amplitude of fluid-borne noise produced by a centrifugal pump which comprises

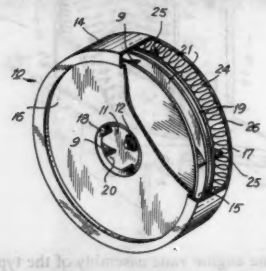
an improved impeller in which the vanes are arranged in a single row and are skewed with respect to the shrouds so that the tips of adjacent vanes overlap in the circumferential direction. The arrangement results in a substantially continuous interaction between the vanes and the cutwater.

3,628,882

CENTRIFUGAL FAN STRUCTURE

Arne Lennart Nilsson, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Dec. 19, 1969, Ser. No. 886,627
Claims priority, application Sweden, Dec. 20, 1968, 17526/68
Int. Cl. F04b *39/00*; F04d *17/12*
U.S. Cl. 415—119 **4 Claims**



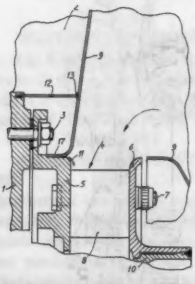
This invention relates to a centrifugal fan having a rotatable fan wheel and stationary diaphragm disposed within a housing having an air inlet and outlet as its opposite ends. The diaphragm is spaced from the end of the housing having the air outlet to form a diffuser chamber. The air inlet of the housing cooperates with an axially disposed inlet of the fan wheel through which air is discharged radially outward to an outlet at the periphery of the fan wheel. The outer periphery of the diaphragm is spaced from the housing to form an annular discharge opening through which air at a high velocity passes from the outlet of the fan wheel to the diffuser chamber. In order to reduce the velocity of the air discharged from the fan wheel to transform its dynamic pressure to static pressure, a helical spring of annular form is disposed in the outer peripheral portion of the diffuser chamber.

3,628,883

ELASTIC SEALING CONNECTION

Thorbjorn Hals, Vestfossen, Norway, assignor to A/S Kongsberg Vapenfabrik, Kirkegardsvien, Kongsberg, Norway

Filed Dec. 5, 1969, Ser. No. 882,565
Claims priority, application Norway, Dec. 6, 1968, 4898/68
Int. Cl. F01d *25/00*
U.S. Cl. 415—204 **2 Claims**



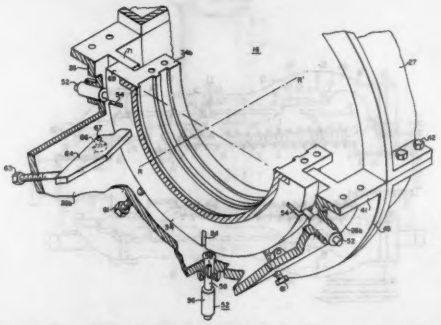
The present specification discloses an elastic sealing connection between an elastic expanding scroll of a radial flow gas turbine and other stationary parts of the turbine, comprising an axially extending, annular, elastic flange which is normally a loose fit in an annular groove and is forced into dual-line contact therewith when the scroll expands during the operation of the turbine.

3,628,884

METHOD AND APPARATUS FOR SUPPORTING AN INNER CASING STRUCTURE

George M. Mierley, Sr., Wilmington, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1970, Ser. No. 50,151
Int. Cl. F01d *25/28*
U.S. Cl. 415—219 **11 Claims**



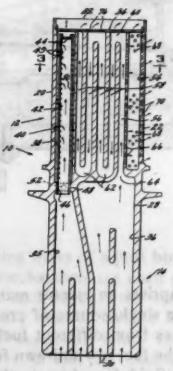
A rotary machine such as a turbine, having outer and inner tubular casings encompassing a rotor and divided along a horizontal plane into upper and lower semicylindrical halves. The improvement comprises an arrangement including an annular series of eccentric bushing structures inserted radially through apertures in the outer casing to adjustably fit axially key slots on the periphery of the inner casing to support the inner casing concentrically relative to the axis of rotation of the rotor. Furthermore, external screw means are connected to internal levers to move the inner casing into sealing relation with the outer casing. The invention also involves the method of supporting the inner casing within the outer casing and moving the inner casing relative to the outer casing.

3,628,885

FLUID-COOLED AIRFOIL

Sidenstick, James E.; Richard W. Brown; Herbert E. Nichols, and Frederick Burggraf, all of Cincinnati, Ohio, assignors to General Electric Company

Filed Oct. 1, 1969, Ser. No. 862,904
Int. Cl. F01d *5/08*
U.S. Cl. 416—97 **11 Claims**



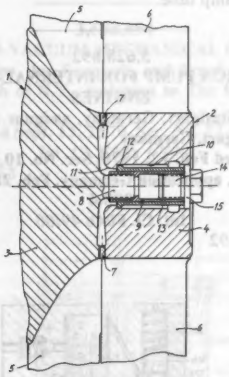
An improved fluid-cooled airfoil having spaced leading and trailing edge chambers and a serpentine passage

therebetween. Coolant is delivered to the leading and trailing edge chambers, respectively, by an impingement insert and the portion of the serpentine chamber adjacent the trailing edge chamber. Various features, such as turbulence promoters, inclined trailing edge passages and film-cooling passageways, are provided to enhance the heat-transfer properties of the airfoil.

3,628,886
ARRANGEMENT FOR ENDWISE CLAMPING TOGETHER THE HUBS OF TWO SECTIONS OF A GAS TURBINE ROTOR

Tore Anton Andvig, Kongsberg, Norway, assignor to A/S Kongberg Vapenfabrikk, Kongsberg, Norway

Filed Nov. 25, 1969, Ser. No. 879,818
Claims priority, application Norway, Nov. 15, 1968, 4692/68
Int. Cl. F01d *5/04*
U.S. Cl. 416—183 **2 Claims**



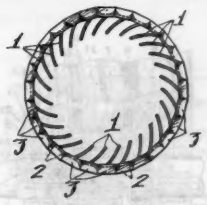
The invention comprises an improved clamping device for clamping the hub of a first section of a gas blade wheel or rotor to the hub of a second section of blade wheel or rotor. The latter hub has a protruding pin located within a bore in the first hub. Adjacent the second hub the bore of the first hub has a shoulder facing the opposite end. A tension sleeve is secured to the pin and a compression sleeve surrounding the tension sleeve abuts the shoulder with its inner end. Both sleeves are located within the bore. A tensioning bolt abuts with its head the opposite end of the compression sleeve and threadedly engages the tension sleeve. There is a considerable clearance between the compression sleeve and the walls of the bore and only very little clearance between the two sleeves.

3,628,887
MULTIBLADE VENTILATOR

Tsunehiko Jchisaka, No. 61, 1-chome, Tamagawa-Nakamachi Setagaya-ku, Tokyo, and Mineichi Akaishi, No. 3148, 2-chome, Hirosawa-cho, Kiryu, both of Japan

Filed Dec. 24, 1969, Ser. No. 887,889
Int. Cl. F04d *29/26*
U.S. Cl. 416—187 **7 Claims**

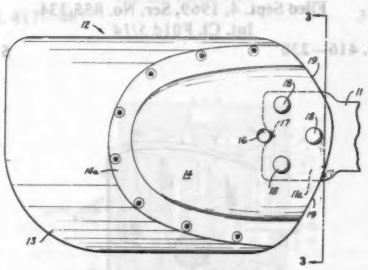
A multiblade ventilator in which a metal plate is stamped to provide a structure having blade elements in the center thereof, coupling portions at both sides of each blade element for coupling the blade elements and projected portions exteriorly of the coupling portions for securely supporting the blade elements. The coupling portions are bent to narrow the distance between adjoining blade elements so that a plurality of blade elements may be arranged in side-by-side relationship within a certain given diameter



3,628,888
LIGHT WEIGHT FAN ASSEMBLY

John A. Wooden, Indianapolis, Ind., assignor to Brookside Corporation, McCordsville, Ind.

Filed Feb. 24, 1970, Ser. No. 13,594
Int. Cl. F04d *29/34*
U.S. Cl. 416—210 **3 Claims**



Disclosed is a fan assembly in which each fan blade is formed by overlying, thin plates which receive, between them, the extending end portion of a fan spider arm, the laminated assembly thus formed being riveted together to provide a light weight, yet rigid, fan spider and blade assembly.

ERRATUM

For Class 416—230 see:
Patent No. 3,628,890

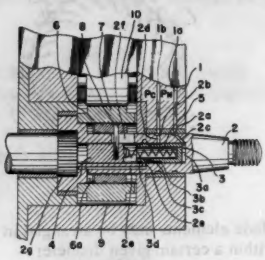
3,628,889
HYDRAULIC INJECTION TIME CONTROLLING DEVICE IN FUEL INJECTION PUMPS

Masayoshi Kobayashi, Higashi-Matsuyama, and Shiro Kaneko, Ogawa-machi, Hiki-gun, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1970, Ser. No. 23,693
Int. Cl. F04b *1/06*
U.S. Cl. 417—221 **2 Claims**

A hydraulic injection time-controlling device comprising, a sleeve combined with drive and driven shafts, displacement of which sleeve changes phase between said shafts; a pilot valve in said drive shaft, which is moved in response to fluid pressure varied with speed of rotation, said sleeve being displaced by control of supply of pressure fluid acting on said

sleeve due to the displacement of said pilot valve, and a spring between a spring seat connected to said sleeve and said pilot valve, the displacement of said sleeve being transmitted to said pilot valve through said spring.

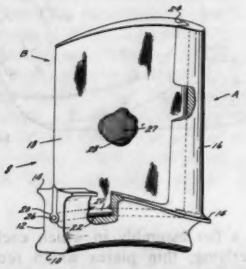


3,628,890

COMPRESSOR BLADES

Edwin D. Sayre, and Lewis J. Stoffer, both of Cincinnati, Ohio, assignors to General Electric Company

Filed Sept. 4, 1969, Ser. No. 855,334
Int. Cl. F01d *5/14*
U.S. Cl. 416—230 5 Claims



An axial flow compressor rotor blade is formed by two separable components. One component is fabricated of metal and forms the leading edge portion of the cambered airfoil and the mounting tang of the blade. The other component is formed of a fiber-composite material and forms the remainder of the cambered airfoil.

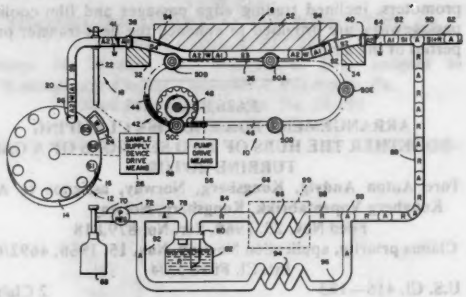
3,628,891

METHOD FOR THE MINIMIZATION OF THE EFFECTS OF PULSATIONS IN INTERMITTENT PUMPING SYSTEMS

Jack Isreeli, Mamaroneck; Aaron Kassel, Brooklyn, and Robert Dannewitz, Yonkers, all of N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,777
Int. Cl. F04b *43/12*, *45/08*
U.S. Cl. 417—53 25 Claims

New and improved method for minimizing the effects of pulsations which occur during the operation of intermittent pumping systems is provided and, as disclosed, is applied to a peristaltic pump which is utilized in a fluid sample supply, treatment and analysis system and comprises the minimization of the effects of the pulsation which occurs each time a pump roller occludes the compressible pump tube, and the minimization of the effects of the pulsation which occurs each time a pump roller discontinues the occlusion of the compressible pump tube.

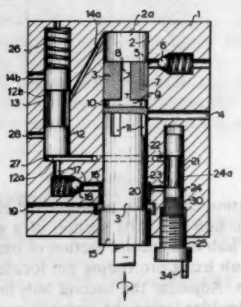


3,628,892

FUEL INJECTION PUMP FOR INTERNAL-COMBUSTION ENGINES

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 12, 1970, Ser. No. 10,887
Claims priority, application Germany, Feb. 28, 1969, P 19 10 090.4
Int. Cl. F04b *49/00*
U.S. Cl. 417—292 5 Claims



In a fuel injection pump in which the fuel quantities delivered thereby to an internal-combustion engine are controlled by a throttle opening arbitrarily variable by means of a control plunger, there is associated with said plunger a heat expandable part which, independently of the arbitrary setting of said plunger, causes a displacement of the plunger in response to the changes in the temperature of the liquid passing through said throttle in order to compensate for the temperature-dependent changes in the viscosity of said liquid.

3,628,893

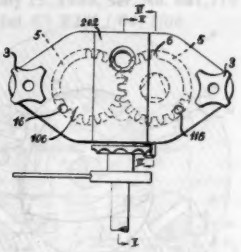
LIQUID AND AIR MIXING GEAR PUMP

Poerio Carpigiani, Via Cairoli 14, Bologna, Italy

Continuation of application Ser. No. 747,300, July 24, 1968. This application May 4, 1970, Ser. No. 31,877
Int. Cl. F04b *49/11*; F04c *15/02*
U.S. Cl. 417—310 6 Claims

This invention relates to a two-gear pump for the formation of liquid and air emulsions, comprising a liquid intake at the point in which the gears begin to come out of mesh; a

liquid and air mixture delivery port at the point in which said gears come into mesh, and an air intake port opening into the



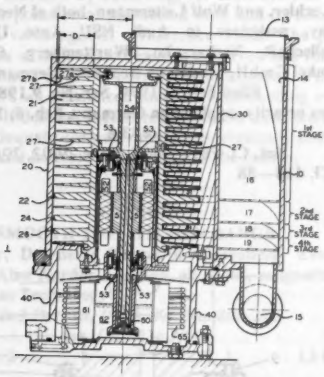
path of the crown of teeth of each gear outside their meshing point.

3,628,894

HIGH-VACUUM MECHANICAL PUMP

John H. Ferguson, Jr., Sauquoit, and Frank Woodruff, New Hartford, both of N.Y., assignors to The Bendix Corporation

Filed Sept. 15, 1970, Ser. No. 72,478
Int. Cl. F04b *17/00*
U.S. Cl. 417—353 **12 Claims**



A new type multistage molecular drag pump wherein the pumping chamber contains rotating surfaces having an area much greater than the stationary surface area of the pumping chamber.

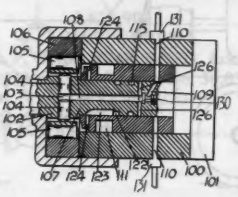
3,628,895

LIQUID FUEL PUMPING APPARATUS

Moshe Drori, East Twickenham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 4, 1969, Ser. No. 873,906
Claims priority, application Great Britain, Nov. 15, 1968, 54,304/68
Int. Cl. F04b *21/02, 39/08, 19/02*
U.S. Cl. 417—458 **3 Claims**

A fuel injection pump of the rotary distributor type and which includes a distributor in which is provided a passage having a delivery valve which closes at the end of an injection stroke and after a predetermined quantity of fuel has flowed back towards the injection pump, and the pump also includes in each outlet, a pressurizing valve which includes a valve member which is spring loaded to maintain the column of fuel intermediate the pressurizing valve and the delivery



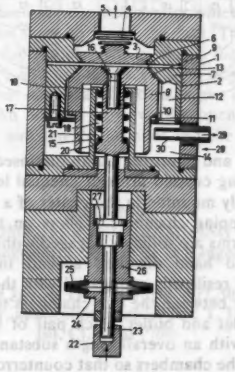
valve under the pressure thereby to prevent the formation of cavities within the column of fuel.

3,628,896

HYDRAULIC PULSE GENERATOR

Holger Graffman, Villa Solimar, Benicasim de Castellon, Spain

Filed Apr. 27, 1970, Ser. No. 32,138
Claims priority, application Sweden, Dec. 12, 1969, 17217/69
Int. Cl. F04b *7/00*
U.S. Cl. 417—487 **3 Claims**



The pulse generator according to the invention comprises a piston pump with a suction space and a compression space, the piston comprising two movable portions, with limited movability relative one another and of concentric relationship, forming between themselves an overflow passageway from the suction space to the compression space, and coacting surfaces in both portions controlling the overflow through said passageway.

3,628,897

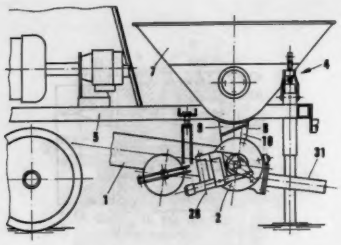
VALVE AND PUMP

Georg Stetter, Strigelstrasse 5, 894 Memmingen, Germany

Filed Oct. 21, 1969, Ser. No. 868,020
Claims priority, application Germany, Oct. 30, 1968, P 18 05 972.8
Int. Cl. F04b *7/00, 15/02*
U.S. Cl. 417—519 **10 Claims**

A pump and a valve therefor, the valve having an inlet conduit, an outlet and an opening connected to the pump cylinder, and a rotary part rotatable selectively to connect

the opening to the inlet conduit and the outlet. The passage formed in the valve when the rotary part is in the position to connect the inlet conduit to the opening has the form of a pipe bend.



3,628,898

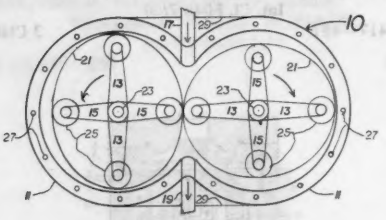
TWIN ELLIPSE PUMP

Edwin C. Bragdon, 2115 San Felipe Road, Houston, Tex.

Filed Apr. 20, 1970, Ser. No. 30,125

Int. Cl. F01c *5/00*; F03c *3/00*; F04c *5/00*

U.S. Cl. 418—45 **3 Claims**



In the new and improved pump disclosed herein, a pair of counterrotating crossed arms of unequal lengths are respectively rotatably mounted in the center of a pair of semicylindrical overlapping chambers. Rollers on the outer ends of each of the arms are rollingly engaged within a resilient elliptically shaped band disposed around the walls of each chamber and resiliently coengaged with the other band at a point midway between the two chambers to separate a common fluid inlet and outlet. Each pair of the arms has one longer arm with an overall length substantially equal to the diameter of the chambers so that counterrotation of the arms will move the rollers on the longer arms around the bands to press successive portions of the bands against the adjacent cylinder walls for forming progressively advancing fluid displacement spaces around the perimeter of the cylinders to conduct fluids from the inlet to the outlet.

3,628,899

EXPANSIBLE FLUID ROTARY ENGINE

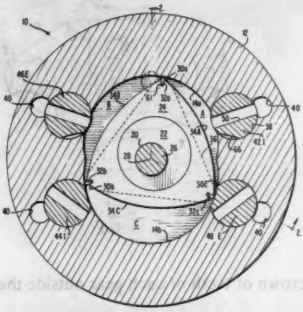
Leslie C. George, 1424 Milan St., New Orleans, La.

Filed July 3, 1969, Ser. No. 839,012

Int. Cl. F01c *1/02*

U.S. Cl. 418—61 **18 Claims**

The engine comprises a two-lobed housing having an epitrochoidal inner surface in which is mounted a triangular rotor on an eccentric carried by a central driven shaft, the rotor and epitrochoidal surfaces forming variable-volume working chambers. Inlet and exhaust valves are disposed in the housing on opposite sides of the cusps of the epitrochoidal surfaces. A timing mechanism oscillates the valves between open and closed positions to respectively admit expansible fluid into the chambers to rotate the rotor and to exhaust the expanded fluid from the chambers. The valves in their closed positions have surfaces conforming to the lobe surfaces to permit the apex portions of the rotor to sweep past the valves without breaking the seal between adjacent chambers. The valves are timed by a plurality of camshafts coupled to the driven shaft. The rotor can be driven in the reverse direction.



3,628,900

CIRCULAR PISTON COMBUSTION ENGINE

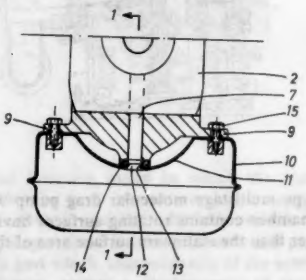
Rolf Lechler, and Wulf Leitermann, both of Neckarsulm, Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Wurttemberg, Germany and Wankel GmbH, Lindau an Bodensee, Germany

Filed Feb. 6, 1970, Ser. No. 9,198

Claims priority, application Germany, Feb. 8, 1969, P 19 06 433.6

Int. Cl. F01c *21/04*; F04c *29/02, 29/04*

U.S. Cl. 418—88 **4 Claims**



The invention relates to a circular piston combustion engine having a housing composed of at least one shell and heads parallel to each other, each shell being arranged between two heads and enclosing a chamber in which a piston is rotatably arranged, and coolant passages being provided in the heads, communicating with a sump attached to the bottom of the housing.

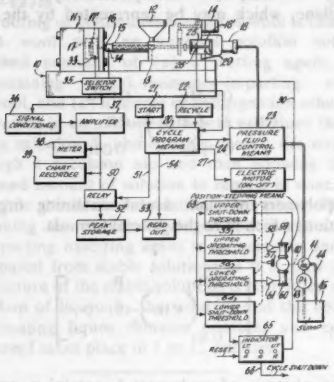
ERRATUM

For Class 425—65 see:
Patent No. 3,628,223

3,628,901
MEANS FOR MONITORING PRODUCT QUALITY IN A PLASTICS INJECTION-MOLDING MACHINE

Donald C. Paulson, Southington, Conn., assignor to The New Britain Machine Company, New Britain, Conn.

Filed July 15, 1969, Ser. No. 841,719
Int. Cl. B29f *1/04, 1/06*
U.S. Cl. 425—149 12 Claims

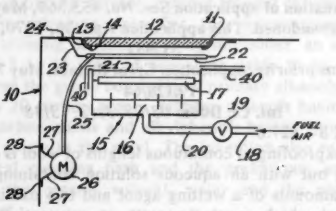


The invention contemplates control of quality and consistency in products of recycled operation of a plastics injection-molding machine by observing, for each cycle of operation, the peak pressure of plasticized melt and by comparing the observed value against a reference value. The polarity and magnitude of difference between observed and reference values are utilized to effect corrective adjustment of the feed force operative on plasticized melt on a succeeding cycle of the machine. If desired, means responsive to detected inability to effect adequate correction may automatically shut down the machine and indicate the polarity of the failure.

3,628,902
SMOOTH TOP KITCHEN RANGE

Jack Huebler, Deerfield; Robert B. Rosenberg, Evergreen Park, and Alan Kardas, Chicago, all of Ill., assignors to Institute of Gas Technology

Filed Oct. 10, 1969, Ser. No. 865,278
Int. Cl. F23c *7/00*
U.S. Cl. 431—2 13 Claims

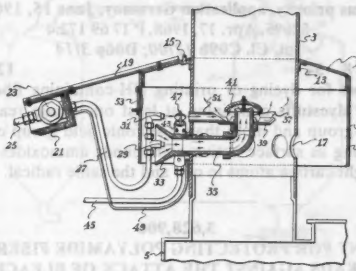


A method and apparatus for heating a load by radiant energy wherein the load is supported on a shield largely transparent to said radiant energy, said shield being kept relatively cool by convective heat transfer which is preferably accomplished by directing a stream of cooling air to the undersurface of the shield.

3,628,903
AFTERBURNER

Kenneth C. Hoyt, P. O. Box #248, Rogers, Ark.

Filed May 11, 1970, Ser. No. 36,033
Int. Cl. F23d *13/20*
U.S. Cl. 431—202 8 Claims

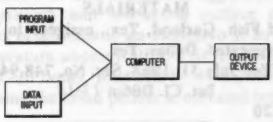


An afterburner for completing the combustion of stack gases and the like has a fuel supply to the interior of the stack and a mechanically controlled pilot which is blown by a jet of gas into the stack to ignite the fuel. The jet flows in parallel with the fuel supply. The pilot and fuel emerge centrally in the stack and are deflected by a downwardly concave deflector that cooperates with a larger upwardly concave deflector. An annular downwardly opening hood surrounds the stack and shields the pilot and the secondary air inlets.

3,628,904
COMPUTER PROGRAMMING

Jean Francois Canguilhem, 35 rue de la Rangee, 92 Garches, France

Filed Jan. 4, 1967, Ser. No. 607,301
Claims priority, application France, Jan. 1, 1966, 44961
Int. Cl. G06f *7/00*
U.S. Cl. 444—1 8 Claims



A system of measurement known as dimensional synthesis to give quantitative measure to multidimensional subjective concepts.

3,628,905
PROCESS FOR DYEING OR PRINTING FIBER MATERIALS CONTAINING NH-GROUPS

Helmut Kirschnek; Dietrich Hildebrand, both of Leverkusen; Udo-Winfried Hendricks, Cologne-Stemmheim; Gerhard Meier, Leverkusen-Rheindorf, and Mathieu Quaedvlieg, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1968, Ser. No. 734,537
Claims priority, application Germany, June 15, 1967, F 52695, Apr. 17, 1968, P 17 69 172.4
Int. Cl. C09b *12/00*; **D06p** *3/14*
U.S. Cl. 8—54 **12 Claims**

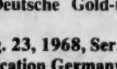
Process for dyeing or printing NH-containing fibers with reactive dyestuffs containing at least one group reactive to the NH-group and more than 1 sulfonic acid group comprising adding as surface active compounds aminoxides with at least eight carbon atoms in one and the same radical.

3,628,906
AGENT FOR PROTECTING POLYAMIDE FIBERS OR THREADS AGAINST THE ATTACK OF BLEACHING AND WASHING BATHS

Karl Dithmar, Eschersheimer, Landstrasse 529, and Peter Koblischek, Parkstrasse 15, both of Frankfurt/Main, Germany, assignor Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler

Filed Aug. 23, 1968, Ser. No. 754,760
Claims priority, application Germany, Aug. 26, 1967, P 15 94 838.6
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 **8 Claims**

Polyamides may be protected during washing or bleaching by applying thereto a compound of the formula:



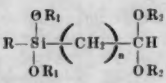
wherein R and R_1 are selected from hydrogen, alkyl groups having one tc six carbon atoms, cyclohexyl, a substituted cyclohexyl group, a substituted alkyl group having one to six carbon atoms in the chain, and salts thereof.

3,628,907
METHODS OF USING ACETAL-CONTAINING ORGANOSILICON COMPOSITIONS TO IMPROVE THE WATER-REPELLENCY OF CELLULOSE CONTAINING MATERIALS

John Gaylord Fish, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 31, 1968, Ser. No. 748,946
Int. Cl. D06m *13/18*
U.S. Cl. 8—120 **9 Claims**

An acetal-containing organosilicon composition represented by the formula:

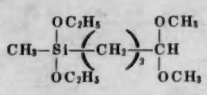
(1) 

where R is selected from the group consisting of C_1—C_{18} alkyls, C_4—C_8 cycloalkyls, aryls, arylalkyls and oxy and halo substituted derivatives thereof;

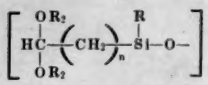
R_1 is selected from the class consisting of C_1—C_{18} alkyls and C_4—C[cycloalkyls, aryls and arylalkyls;

R_2 is selected from the class consisting of C_1—C_{18} alkyls and C_4—C_8 cycloalkyls, and n is an integer from two to 17.

One or such acetal-containing organosilicon compositions is, for example, methyl(diethoxy)(3,3-dimethoxypropyl)silane, which may be represented by the structural formula:

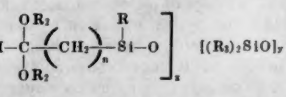
(2) 

Homopolymers of such acetal-containing organosilicon compositions which have the general formula:

(3) 

and copolymers of such acetal-containing organosilicon compositions and diorganodialkoxy silanes having the general formula:

4. $(R_3)_2Si(OR_4)_2$, the copolymer having the general formula:

(5) 

where R_3 and R_4 are selected from the same groups as R_1 and R_2, respectively, and x and y represent the mole fraction of each component and both x and y can vary up to one.

Also encompassed is a method for improving the water-repellency of a material containing substantial quantities of cellulose.

3,628,908
SHRINKPROOFING WOOL WITH OXIDIZING AGENTS USING FOULARD LIQUID APPLICATION TECHNIQUE

Alan August Goldberg, and John A. Fullwood, both of Ambergate, England, assignors to Precision Processes (Textiles) Limited, London, England

Continuation of application Ser. No. 453,369, May 5, 1965, now abandoned. This application Apr. 30, 1970, Ser. No. 31,831
Claims priority, application Great Britain, May 7, 1964, 19,128/64
Int. Cl. D06m *03/08, 3/12, 13/38*
U.S. Cl. 8—127.6 **8 Claims**

Shrinkproofing of continuous lengths of wool is effected by wetting out with an aqueous solution containing predetermined amounts of a wetting agent and two oxidizing agents for wool which react therewith at substantially different rates, immediately passing the wetted out wool through a precision nip and then allowing the thus-predetermined amount of solution to remain in contact with the wool while the desired oxidation takes place. The solution containing the two oxidizing agents is an unstable one and is freshly prepared from stable solutions as it is used up. The rate of admixture of the stable solutions is correlated with the rate of pickup of liquor by the wool so that the volume of prepared treating liquor remains constant and complete renewal thereof takes place in 1 to 15 minutes.

3,628,909

SHRINKPROOFING WOOL WITH OXIDIZING AGENTS USING FOULARD LIQUID APPLICATION TECHNIQUE

Alan August Goldberg, and John A. Fullwood, both of Ambergate, England, assignors to Precision Process (Textiles) Limited, Ambergate, England

Continuation of application Ser. No. 463,419, May 5, 1965, now abandoned. This application Apr. 30, 1970, Ser. No. 31,832 Claims priority, application Great Britain, 19,129/64

Int. Cl. D06m *3/08, 3/12, 13/38*

U.S. Cl. 8—127.6 9 Claims

Shrinkproofing of continuous lengths of wool is effected by wetting-out wool with an aqueous solution containing predetermined amounts of (a) a wetting agent, (b) a halogen-containing shrink-resistance-imparting oxidizing agent for wool, and (c) a source of hydrogen ion other than a per acid present in an amount sufficient to reduce the pH of the solution to below 5, immediately passing the wetted-out wool through a precision nip and then allowing the thus predetermined amount of solution to remain in contact with the wool while the desired oxidation takes place. The solution containing the acidified halogen-containing shrink-resistance-imparting oxidizing agent is an unstable one and is freshly prepared from stable solutions as it is used up. The rate of admixture of the stable solutions is correlated with the rate of pickup of liquor by the wool so that the volume of prepared treating liquor remains constant and complete renewal thereof takes place in 1 to 15 minutes.

3,628,910

COMPOSITIONS FOR THE DEFORMATION OF KERATIN

Martin Grayson, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 2, 1966, Ser. No. 546,554

Int. Cl. A61k *7/10*

U.S. Cl. 8—127.51 5 Claims

A method for deforming keratin is provided which comprises applying such compositions to keratin.

3,628,911

TEXTILE CHEMICAL CLEANING PROCESSES

Werner Grunewalder, Duesseldorf-Holthausen, Germany, assignor to Henkel & Cie GmbH, Duesseldorf-Holthausen, Germany

Filed Nov. 18, 1968, Ser. No. 776,753

Claims priority, application Germany, Dec. 8, 1967, P 16 17 136.1

Int. Cl. D06l *1/02*

U.S. Cl. 8—142 2 Claims

In the chemical cleaning of textiles by subjecting the textiles to a chemical cleaning bath consisting of a major amount of an organic solvent, a minor amount of water and a surface-active cleaning intensifier, the improvement which comprises utilizing, as said cleaning intensifier, an addition product of 2 to 14 mols of propylene oxide to an alcohol selected from the group consisting of primary alkanols having from 10 to 20 carbon atoms, primary alkenols having from 10 to 20 carbon atoms and alkylphenols having from six to 12 carbon atoms in the alkyl. The invention also relates to the chemical cleaning bath and the preliminary emulsion containing the organic solvent, water and the propylene oxide adduct.

3,628,912

PROCESS FOR INHIBITING HYDROGEN PERMEATION OF STEEL IN AMMONIA SERVICE

Donald H. Oertle, and Frederick J. Radd, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 25, 1968, Ser. No. 778,755

Int. Cl. C23f *7/04, 9/02*

U.S. Cl. 21—2.5 2 Claims

A mixture of water and oxygen as an inhibitor for preventing hydrogen permeation of steel in ammonia service.

3,628,913

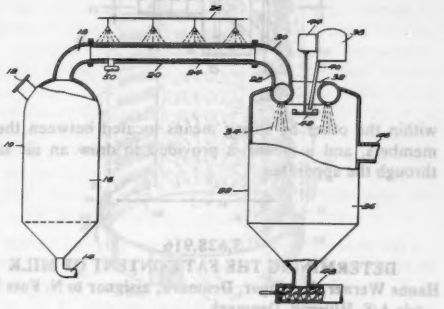
PROCESS FOR RECOVERING TITANIUM TETRACHLORIDE FROM TITANIFEROUS ORE

Keith L. Uhland, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 22, 1969, Ser. No. 868,341

Int. Cl. C01g *23/02, 49/10*

U.S. Cl. 23—87 T 5 Claims



This invention relates to a process for transferring effluent containing ferrous chloride and titanium tetrachloride resulting from high-temperature chlorination of titaniferous materials from a chlorination furnace through a conduit to a spray condenser for separation of vaporous titanium chloride. During the transfer, the effluent is kept at least 20° C. above the ferrous chloride dew point by controlling heat loss from the conduit.

3,628,914

PREPARATION OF ACTIVE ALUMINA AGGLOMERATES OF HIGH-MECHANICAL STRENGTH

Maxime Graulier, Paris, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Continuation-in-part of application Ser. No. 562,076, July 1, 1966, now Patent No. 3,480,389. This application Nov. 21, 1969, Ser. No. 878,882

Claims priority, application France, July 9, 1965, 24,121

Int. Cl. C01f *7/02*; B01j *11/58*

U.S. Cl. 23—143 3 Claims

The preparation of active alumina agglomerates of high-mechanical strength and low-active surface consisting of treating pellets of alumina in an autoclave in an acidic medium at a temperature above 100° to 250° C. for a time within the range of 1–20 hours, followed by drying the treated pellets and calcining the dried pellets at elevated temperature.

3,628,915

CHEMICAL AGENT DETECTOR HOLDER AND METHOD OF TESTING AIR AND LIQUIDS FOR CHEMICAL AGENT CONTAMINATION

Louis A. Robertson, Edgewood, Md., assignor to The United States of America as represented by the Secretary of the Army

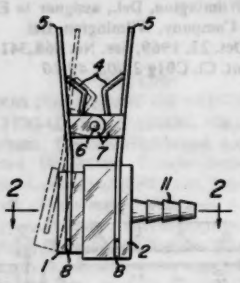
Filed July 3, 1969, Ser. No. 838,806

Int. Cl. G01n *21/20, 31/22*

U.S. Cl. 23—230 R 6 Claims

An apparatus means and method for detecting any chemical agent contamination within an air or water sample; the apparatus comprising a detector means located between a pair of block members with each block member adapted to

move in respect to each other by means of arm members attached to each block member. One block member is held



within the other by spring means located between the arm members, and a means is provided to draw an air sample through the apparatus.

3,628,916

DETERMINING THE FAT CONTENT OF MILK

Hanne Werner, Helsingor, Denmark, assignor to N. Foss Electric A/S, Hillerod, Denmark

Filed Jan. 14, 1969, Ser. No. 790,931
Claims priority, application Denmark, Jan. 17, 1968, 154/68
Int. Cl. G01n *33/04*; A23c *3/08*
U.S. Cl. 23—231 **3 Claims**

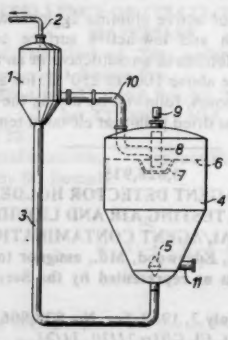
A batch of an oil-in-water emulsion such as milk or a milklike substance is stabilized by the addition of a viscosity increasing agent, a portion of the batch is analyzed to determine the fatty content thereof and the remainder of the stabilized batch is then utilized as a reference standard for checking and calibrating apparatus which is used to determine the fatty content of such emulsions by the light transmission characteristics thereof.

3,628,917

DEVICE FOR EVAPORATIVE CRYSTALLIZATION

Larry George Nault, Warren, Pa., assignor to Struthers Scientific and International Corporation

Filed June 11, 1968, Ser. No. 736,111
Claims priority, application Great Britain, July 26, 1967, 34,352/67
Int. Cl. B01d *9/02*
U.S. Cl. 23—273 R **1 Claim**



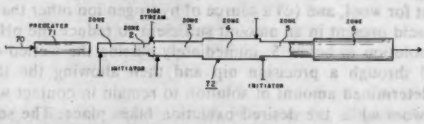
A large size crystallizer has a separate vacuum evaporation chamber and a crystallizer tank. The crystallizer tank has fluid enter its bottom to flow upward past a flow distribution device and leave at its upper portion where a centrally located funnel collects fluid at a given fluid level.

3,628,918

APPARATUS FOR PRODUCTION OF POLYETHYLENE

Charles D. Beals; George I. Fitzpatrick, and Kim L. O'Hara, all of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed May 15, 1970, Ser. No. 37,610
Int. Cl. C08f *1/98*
U.S. Cl. 23—284 **9 Claims**



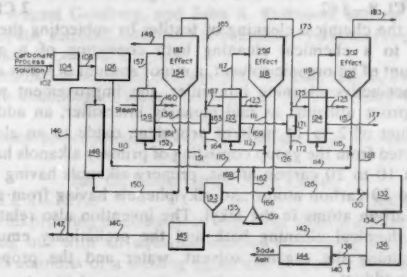
Polyethylene is produced by polymerization of ethylene along or with comonomers or telogens (modifiers) in an elongated tubular reactor having an inlet and outlet and at least one reaction zone and one cooling zone in the presence of free radical or free oxygen yielding initiator at elevated temperatures and pressures by passing the reaction mixture through each of the reaction zones of the tubular reactor having internal diameters between about 0.5 and 3 inches at bulk fluid velocities sufficient so that the Flow Number in each reaction zone is greater than 3.3 ft³./sec. Flow Number is defined as the bulk fluid velocity in ft./sec. times diameter in feet. With Flow Numbers in excess of 3.3 ft³./sec. in the reaction zones, it has been found that the effective reaction volume in the reaction zone has been increased and, accordingly, a more efficient process for producing a high quality polyethylene.

3,628,919

CRYSTALLIZATION PROCEDURE FOR SODIUM CARBONATE PRECURSOR CRYSTALS

William D. Beauchamp, Syracuse; Eugene B. Port, Solvay, and Carlton J. Howard, Liverpool, all of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,430
Int. Cl. B01d *9/02*
U.S. Cl. 23—301 R **9 Claims**



Invention relates to an improved crystallization procedure for the preparation of sodium carbonate precursor crystals such as sodium bicarbonate, sodium sesquicarbonate, anhydrous sodium carbonate, and sodium carbonate monohydrate by a crystallization procedure which involves providing in the crystallization system a sufficient amount of proper quality sodium carbonate precursor seed crystals of a particle size less than about 10 mesh to reduce the adverse modifying effect on crystal quality of organic carbon on sodium carbonate precursor crystals formed.

3,628,920

PREPARATION OF A CUPRIC HYDROXIDE-PHOSPHOROUS COMPLEX

James E. Barker, Freehold, N.J., assignor to Cities Service Company

Filed Feb. 25, 1969, Ser. No. 802,273
Int. Cl. C01g *3/00, 3/02*
U.S. Cl. 23—315 13 Claims

Cupric hydroxide is prepared by mixing a copper sulfate solution, phosphoric acid and a solution of sodium hydroxide. The phosphoric acid is employed in an amount from about 0.05 to about 0.1 moles per mole of copper sulfate. The relative mixing rates are such that a pH of from about 10 to about 11.5 is maintained. The reaction temperature is maintained at less than 112° F., such as from about 85° F to about 110° F. The retention time of the reaction mixture in the reaction zone at such temperatures will generally be from about ½ minute to about 10 minutes. The reactants may be added to the reactor as three separate streams or, alternately, the phosphoric acid and copper sulfate may be premixed prior to addition to the reaction zone. The precipitate formed comprises the cupric hydroxide product, which is recovered as a cupric hydroxide-phosphorous complex having a bound phosphorous content of at least about 2 percent by weight calculated as P_2O_5. This impure cupric hydroxide product, which has a very small particle size and a large surface area, is well suited for use as a fungicide.

3,628,921

CORROSION RESISTANT BINDER FOR TUNGSTEN CARBIDE MATERIALS AND TITANIUM CARBIDE MATERIALS

Franklin J. Hill, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis.

Filed Aug. 18, 1969, Ser. No. 851,038
Int. Cl. C22c *29/00*
U.S. Cl. 29—182.7 4 Claims

Cemented carbide compositions and shaped bodies produced therefrom containing tungsten carbide or titanium carbide and a binder alloy containing cobalt and nickel and, by weight, about 18 to 20 percent chromium, 0.1 to 1 percent platinum and 0 to 3 percent iron.

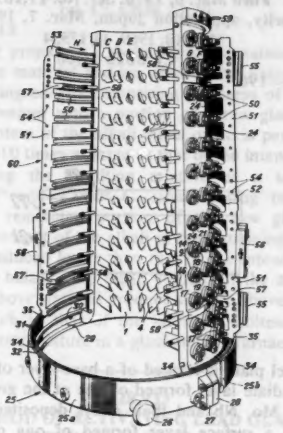
3,628,922

METHOD OF ASSEMBLING A PLURALSTAGE AXIAL COMPRESSOR

Walter Sprenger, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Original application Jan. 24, 1968, Ser. No. 700,191, now Patent No. 3,538,579. Divided and this application Jan. 21, 1970, Ser. No. 8,121
Int. Cl. B23p *15/00*
U.S. Cl. 29—156.4 R 4 Claims

For assembly of a plural stage axial compressor in which a blade carrier divided into plural parts along an axial plane and provided with a plurality of variable pitch blades is to be assembled to a pitch adjusting sheath, likewise divided into plural parts along an axial plane, with pins on adjusting levers of the blades being engaged in grooves on the inside of the sheath, there is disclosed a method comprising the steps of supporting a separate part of the carrier and a separate part of the sheath coaxially, rotating those separate parts with respect to each other about their common axis to engage the pins on the separate carrier part in the grooves of the separate sheath part, and fastening the separate parts together. There is also disclosed a fixture for use in assembling together such a blade carrier and sheath, this fixture comprising a ring demountable along a diameter into two parts and having two plane, parallel and coaxial annular surfaces, one for support of one blade carrier part and the other for support of one sheath part, and two cylindrical surfaces coaxial with each other and with those annular surfaces, one



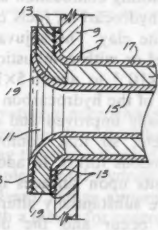
for centering of the blade carrier part and the other for centering of the sheath part.

3,628,923

METHOD OF MAKING HEADER JOINT FOR A CLAD TUBULATION

Sheldon S. White, Brookline, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1968, Ser. No. 770,172
Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*
U.S. Cl. 29—157.4 6 Claims



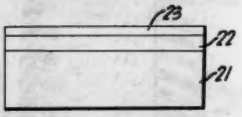
A ferrous core-forming tube is internally and externally clad with titanium. The ferrous core is chemically etched away from between the claddings for some distance from their ends so that these ends extend from the core. The tube thus prepared is inserted through an opening in a header with said ends adjacent one side of the header. These ends are then flared outwardly into engagement with the adjacent side of the header and sealingly welded thereto. In cases in which the cladding is not strong and/or is thin a cylindrical slug or thimble of titanium is inserted into the etched-out space prior to flaring and welding.

3,628,924

TA OR TA ALLOY CLAD STEELS

Yasuhiro Nishio, Saeki-gun; Takashi Ohmae; Yasuyuki Yoshida, both of Hiroshima, and Tamotsu Oka, Saeki-gun, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1970, Ser. No. 17,189
Claims priority, application Japan, Mar. 7, 1969, 44/16822, Mar. 10, 1969, 44/17534
Int. Cl. B32b *15/00*
U.S. Cl. 29—196 3 Claims



Clad steel plate is formed of a base layer of carbon steel, an intermediate layer formed of one of the group consisting of Ti, Zr, Mo, Nb and their alloys deposited on the base layer, and a surface layer formed of one of Ta and Ta deposited on the surface of the intermediate layer. In welding sections of such clad steel plates together, the base layers are welded together using a welding rod of a common metal with the base layer, the edges of the intermediate and surface layers are spaced apart forming a groove extending across the weld in the base layers, a metal plate formed of a material compatible with the intermediate and surface layers is positioned in the groove, and a bridge member of the same material as the surface layer is fillet welded to the surface layers of both plate sections and covers the metal plate located within the groove.

3,628,925

COMBUSTION ADJUVANT

Maclin R. Milner, Clearwater, Fla., assignor to Trimex Corporation, Clearwater, Fla.

Filed Feb. 16, 1970, Ser. No. 11,827
Int. Cl. C10l *9/00, 1/32*
U.S. Cl. 44—4 7 Claims

A method of promoting combustion is provided by including an adjuvant for hydrocarbon fuels comprising a calcium based montmorillonite clay. The adjuvant is combined with the hydrocarbon fuel or with combustion air in an effective amount of about 2×10^{-5} to about 5×10^{-1} weight percent, based on the weight of the hydrocarbon fuel. Combustion efficiency is substantially improved and oxidation is substantially more complete, so that combustion products are produced in less noxious forms. In additions, the nature of slag or other deposits upon surfaces in a furnace or combustion chamber are substantially altered, so that corrosive conditions do not occur and the deposition of slag is prevented or materially reduced, and the ash is produced in a soft, friable form.

3,628,926

CYCLIC IMINES AS BIOCIDES IN PETROLEUM PRODUCTS

George W. Eckert, and Raymond Cadorette, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 19, 1968, Ser. No. 785,379
Int. Cl. C10l *1/14*
U.S. Cl. 44—63 1 Claim

A method of preventing growth of micro-organisms in petroleum hydrocarbons in contact with water by incorporating from about 0.005 to 0.1 percent by volume of a cyclic imine selected from the class comprising pyrrolidine, piperidine and hexamethylene imine into said petroleum hydrocarbon.

3,628,927

INACTIVATION OF METAL DEACTIVATORS IN GASOLINE

Frederick N. Baumgartner, Plainfield, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 23, 1969, Ser. No. 788,690
Int. Cl. C10l *7/02*
U.S. Cl. 44—7 A 7 Claims

7. A method of preparing a flame thrower fuel from a gasoline containing from one to three pounds per 1000 bbls. of a metal deactivator selected from the group consisting of N,N¹ disalicylidene 1, 2 diamino propane and N,N¹ disalicylidene 1, 2 diaminoethylene which comprises percolating said gasoline through a bed of nuclear sulfonated cross linked styrene-divinyl benzene copolymer and thereafter gelling said gasoline with about 2 percent of an aluminum soap selected from the class consisting of aluminum hydroxy di-2 ethyl hexoate and the aluminum hydroxy disoap of mixed branched chained octoic acids.

3,628,928

MIDDLE DISTILLATE

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 2, 1970, Ser. No. 7,973
Int. Cl. C10l *1/22*
U.S. Cl. 44—66 6 Claims

Middle distillate of improved pour point containing a pour-point-depressant amount of a C_{14}—C_{20} saturated carboxylic acid ester of alpha-methylglucoside.

3,628,929

METHOD FOR RECOVERY OF COAL ENERGY

Eugene D. Glass, and Vaughan W. Rhoades, both of Tulsa, Okla., assignors to Cities Service Oil Company

Filed Dec. 8, 1969, Ser. No. 883,274
Int. Cl. E21c *43/00*; C10j *5/00*
U.S. Cl. 48—210 9 Claims

Two or more wells are drilled into a coal seam. Each well is completed to isolate all other strata from the coal seam. A radial horizontally directed fracture is induced so as to connect the wells communicatively. The coal seam is ignited through at least one injection well and the combustion front propagated from one or more injection wells through the horizontal fractures to subsequent production wells by injection of a combustion supporting gas. Injection pressures utilized are sufficiently high to raise the overburden at the fractured surfaces and permit continued air injection during the combustion process. Regulation of the width of the fracture network and corresponding gas and liquid flow is achieved by the control of the injection pressure. The continued production of a flammable gas and coal tar liquids is thereby afforded.

3,628,930

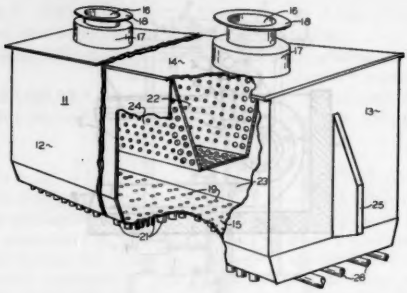
METHOD AND APPARATUS FOR PREPARING MOLTEN MATERIAL INTO GLASS FIBERS

Walter William Harris, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed Oct. 28, 1969, Ser. No. 871,883
Int. Cl. C03b *37/00*
U.S. Cl. 65—2 11 Claims

A bushing for rendering materials molten used for forming glass fibers wherein the flow pattern of material within the bushing is controlled. An internal baffel has an array of per-

forations in a pattern such that, when the material on one side of the baffel is cooler than that on the other side, the



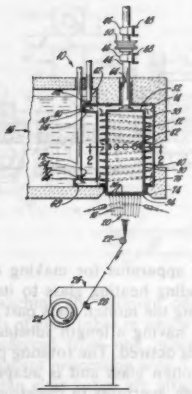
percentage of open area is greater in the flow path to those regions of the bushing of highest temperature than the path to those regions of lower temperature.

3,628,931

APPARATUS HAVING ROTATING BUSHING FOR FORMING FIBERS

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed June 2, 1969, Ser. No. 829,631
Int. Cl. C03b 37/02
U.S. Cl. 65—11 W 17 Claims



Apparatus is provided for forming fibers from a heat-softenable, filament-forming viscous liquid. A bushing is in the form of a hollow, cylindrical, rotating body having a spirally contoured outer surface, with a right-hand helix at one end and a left-hand helix at the other end, and with inlet openings spaced around an intermediate portion. Means are provided at one end to rotate the bushing and orifices are provided at the other end through which fibers are attenuated. The bushing is located in a liquid-filled chamber, the liquid being fed under pressure by the helixes to the inlet openings where it is forced inwardly and subsequently subdivided into fibers through the orifices. The orifices can be located in a circular pattern to form a hollow cone of fibers attenuated therefrom, with means located below the center of the circular pattern for supplying a coating material to the filaments or for feeding a filamentary core to the center of the collected filaments.

3,628,932

PREPARATION OF GLASS CONTAINING SELENIUM

Touru Inoue, Nishinomiya-shi, and Masakiyo Tachibana, Takarazuka-shi, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Higashi-ku, Osaka, Japan

Filed Jan. 3, 1969, Ser. No. 788,966
Claims priority, application Japan, Jan. 10, 1968, 43/1231
Int. Cl. C03b 23/20
U.S. Cl. 65—18 5 Claims

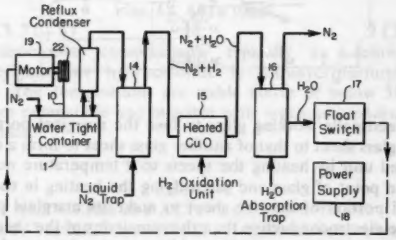
Process for preparing a molten glass containing selenium as an additive material and an alkali metal oxide as one of the essential ingredients comprising the steps of mixing the source of selenium with a portion of a raw glass batch of which the content of the alkali metal oxide in percentage by weight is 1.5–10 times as large as that of the intended molten glass, sintering the resulting mixture at a temperature between 500° and 1,000° C., then mixing the sintered product and remaining portion of the raw glass batch, wherein the content of the alkali in the remaining portion of raw glass is reduced lower than that of the intended molten glass so as to balance the mean content of the alkali metal oxide in the above sintered product and the above remaining raw glass batch to that of the intended molten glass, and melting the latter mixture in a glass melting furnace.

3,628,933

METHOD OF ACTIVATING LEAD GLASS MICROCHANNEL PLATES

Walter E. Kramer, Niles, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 27, 1970, Ser. No. 40,982
Int. Cl. C03c 23/00; H01b 7/20; C03c 17/06
U.S. Cl. 65—30 7 Claims



A method of activating a microchannel plate formed of a stack of very small internal diameter channels constructed of lead glass, by reacting the microchannel plate with a solution of a simple or complex metal hydride reducing agent dissolved in an inert solvent, and an apparatus for use with such method provided with a means for controlling the reaction.

3,628,934

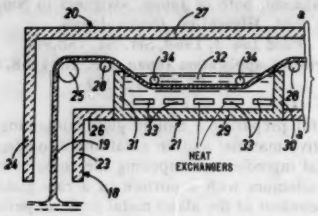
TEMPERATURE CONTROL OF CHEMICAL TEMPERING OF SOLID GLASS OR VITROCRYSTALLINE BODIES

Jean Duthoit, Gilly, Belgium, assignor to Glaverbel S.A., Watermael, Boitsfort, Belgium

Filed Apr. 23, 1968, Ser. No. 723,380
Claims priority, application Luxembourg, Apr. 28, 1967, 53,555
Int. Cl. C03c 21/00
U.S. Cl. 65—30 11 Claims

A process and apparatus for improving the properties of materials which are chemically tempered by means of an ion

diffusion process, the improvement being obtained by decreasing the temperature at which the process is carried



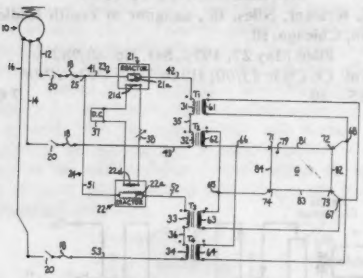
out during the course of the ion diffusion operation, by at least 40° C.

3,628,935

WELDING GLASS SETS

Robert A. Jansson, and Frank J. Rau, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,265
Int. Cl. C03b *23/24*; B23k *11/24*; H05b *3/02*
U.S. Cl. 65—40 **9 Claims**



Electrically working glass to fuse the marginal portion of one glass sheet to that of another glass sheet to form a double glazed unit by heating the sheets to a temperature near the strain point of glass and intensifying the heating in the marginal portion of the one sheet to make its marginal portion more electroconductive than the remainder of the sheet. The electric circuit used in the welding process has a polyphase alternating current voltage source coupled to the marginal edge portion through saturable reactors and a transformer circuit. One phase of the power source is coupled through a saturable reactor across one pair of opposite marginal edge portions and another phase is coupled through a saturable reactor across the other pair of opposite marginal edge portions. An output current is thus produced in the marginal edge portion which is approximately equal along all of the four side edges.

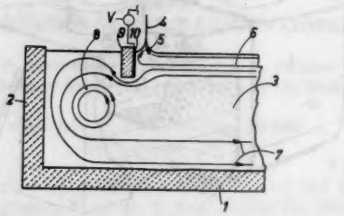
3,628,936

METHOD AND APPARATUS FOR SHEET GLASS FABRICATION

Emile Plumat, Gilly, and Marcel Duperroy, Ransart, both of Belgium, assignors to Glaverbel S.A., Watermael-Bortsfort, Belgium

Filed Sept. 25, 1968, Ser. No. 762,390
Claims priority, application Luxembourg, Sept. 25, 1967, 54526
Int. Cl. C03b *15/00*
U.S. Cl. 65—90 **24 Claims**

A method and apparatus for producing sheet glass drawn from a molten glass bath in a drawing kiln in which a forward current of hot glass flows upon a return current of cooler glass flowing in the opposite direction by intercepting a portion of the forward current at a point directly downstream of



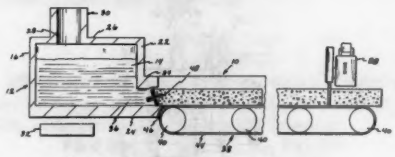
the point where the glass is drawn from the bath for causing only glass from the intercepted portion of the forward current to be drawn.

3,628,937

APPARATUS FOR MAKING FOAMED GLASS PANELS

Lawrence A. Schott, 15940 Warwick, Detroit, Mich.

Continuation-in-part of application Ser. No. 770,245, Oct. 24, 1968, now abandoned. This application Aug. 5, 1970, Ser. No. 61,314
Int. Cl. C03b *19/08*
U.S. Cl. 65—141 **6 Claims**



A method and apparatus for making cellular or foamed glass panels including heating glass to its molten state in a furnace and feeding the molten glass past an elongated rotating paddle wheel having a length substantially equal to the width of the panels desired. The rotating paddle wheel is submerged in the molten glass and is adapted to supply pressurized gas through apertures in the structure of the paddle wheel for forming bubbles. The rotation of the wheel thoroughly mixes the bubbles into the molten glass. The foamed glass is then conveyed away from the paddle wheel by means of a conveyor system and allowed to cool. The cooled foamed glass is then cut into panels of the desired length.

3,628,938

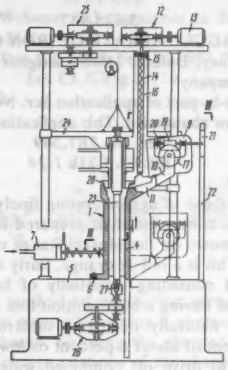
DEVICE FOR MANUFACTURING PIPES FROM GLASS METAL

Mikhail Ivanovich Kozmin, ul. Shmidta, 31, kv.6, Konstantinovka Donetskoi oblasti, U.S.S.R.

Filed Dec. 9, 1968, Ser. No. 782,331
Int. Cl. C03b *5/30, 5/00*
U.S. Cl. 65—207 **5 Claims**

A device for manufacturing pipes from glass metal comprises, a vertically extending mold which is laterally split into three portions and is supported for vertical reciprocation.

The device includes an assembly for laterally displacing the mold portions into operative engagement with one another,



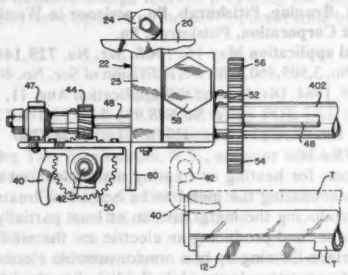
and out of engagement with one another. A tipping ladle feeder is fixed to one of the portions of the mold and is vertically displaceable together with that one portion of the mold.

3,628,939

GLASS TUBE-FORMING MACHINE

Donald G. Trutner, Chatham, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Sept. 4, 1969, Ser. No. 855,089
Int. Cl. C03b *35/00*
U.S. Cl. 65—276 **11 Claims**



An improved machine for forming one or more helical grooves in the walls of glass tubes in which the glass tubes are automatically transferred from one processing area of the machine to the adjacent processing area. Lifters for engaging the open ends of the glass tubes are attached to a movable carriage assembly which provides for the transfer of the tubes from one area of the machine to an adjacent area during its forward travel and provides for the grooving of the tubes during its reverse travel. A positioning mechanism insures that the lifters are properly aligned over the open ends of the tubes prior to engagement. An arrangement is also disclosed for transferring two tubes in tandem to increase the machine's processing speed.

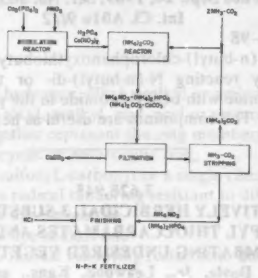
3,628,940

METHOD FOR PRODUCING NITROPHOSPHATE FERTILIZER

Paul R. Geissler, Metuchen, and Ellington M. Magee, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company

Filed Jan. 2, 1969, Ser. No. 788,401
Int. Cl. C05b *11/06*
U.S. Cl. 71—35 **8 Claims**

Process for treating calcium phosphate rock having a low fluorine content, with an amount of nitric acid, sufficient to produce an acidulation effluent comprising water-soluble products. The acidulation effluent is treated with a large excess of an ammonium carbonate material, the amount used



being sufficient to produce water-soluble ammonium nitrate and phosphate in solution, and a precipitate of calcium carbonate, the solution from which the precipitate is removed being processed to obtain a nitrophosphate fertilizer.

3,628,941

ANTIMICROBIAL SOLUTIONS OF DODECYLGUANIDINE HYDROCHLORIDE HAVING LOW-TEMPERATURE STABILITY

Alfred Finlay Marks, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 604,164, Dec. 23, 1966, now abandoned. This application Aug. 8, 1969, Ser. No. 848,712
Int. Cl. A01n *9/00*
U.S. Cl. 71—67 **2 Claims**

Antimicrobial compositions, typically a solution of dodecylguanidine hydrochloride in tetrahydrofurfuryl alcohol. The compositions are stable above or below 30° F. and are compatible and miscible with organophosphorus insecticides.

3,628,942

HERBICIDALLY ACTIVE COMPOSITIONS

Joseph F. Vartiak, Naperville, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 14, 1964, Ser. No. 418,343The portion of the term of the patent subsequent to Aug. 26, 1986, has been disclaimed.
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **3 Claims**

The invention is directed to concentrated hydrocarbon liquid solutions of herbicidally active 3,5,6-substituted uracils. These compositions are afforded by employing hydrocarbon oil which has a high aromatic content and uses as a cosolvent a fatty acid. This solvent system allows 5–20 percent by weight of the uracil to be dissolved therein.

3,628,943

HERBICIDAL COMPOSITION AND METHOD OF COMBATING UNDESIRABLE PLANT GROWTH

Bengt Hjalmar Gullfeldt, Selangergrand 3, Stockholm-Vallingby, Sweden

Filed Mar. 26, 1969, Ser. No. 810,796
Int. Cl. A01n *9/22, 9/12*
U.S. Cl. 71—93 **5 Claims**

Total herbicidal composition comprising a mixture of a dehalogenated benzonitrile or a derivative thereof, a halogenated aliphatic carboxylic acid and a triazine or a halogenated phenoxy-alkyl-carboxylic acid.

3,628,944

BENZYL-N-(N-BUTYL)-CHLOROPHENOXYTHIO-BUTYRIMIDATES AS HERBICIDES

Edmund J. Rumanowski, Dover, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 863,011
Int. Cl. A01n 9/12
U.S. Cl. 71—98 **6 Claims**

Benzyl-N-(n-butyl)-chlorophenoxythiobutyrimidates are prepared by reacting N-(n-butyl)-di- or trichlorophenoxythiobutyramide with benzyl bromide in the presence of sodium alkylate. The compounds are useful as herbicides.

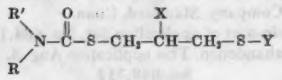
3,628,945

SELECTIVELY HERBICIDAL 3-SUBSTITUTED-2-HALOPROPYL THIOLCARBAMATES AND METHOD OF COMBATING UNDESIRED VEGETATION

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 625,603, Mar. 24, 1967, now Patent No. 3,510,290. This application Aug. 19, 1969, Ser. No. 851,432
Int. Cl. A01n 9/12
U.S. Cl. 71—100 **8 Claims**

Undesired vegetation, particularly noxious grasses in growing crops, are combated by pre-emergent application of selective herbicides made by reacting an organic compound having a reactive halogen substituent with a 2,3-epithiopropyl N,N-dialkylthiolcarbamate to yield a compound of the structural formula



in which R and R′ represent hydrocarbon substituents containing less than 10 carbon atoms, X is halogen, preferably bromine or chlorine and Y may be alkanoyl, chloroalkanoyl, bromoalkanoyl, alkoxyalkanoyl, N,N-dialkylcarbamyl, carbalkoxycarbonyl, alkoxymethyl, alkoxyethyl, chlorobenzoyl, bromobenzoyl, chlorophenoxyacetyl, bromophenoxyacetal, cyclopropylcarbonyl, cyano, methanesulfonyl, alkanoylmethyl alkylmercaptomethyl, nitrobenzoyl, chlorocarbalkoxyl, bromocarbalkoxyl, ethynylmethyl, dialkylphosphono, dialkylthiophosphono or alkylmercaptocarbonyl, said alkanoyl, alkoxy, carbalkoxy and alkyl structures containing less than 10 carbon atoms.

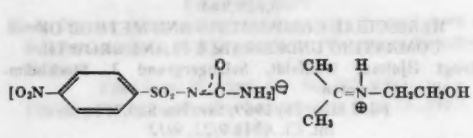
3,628,946

METHOD OF CONTROLLING THE GROWTH OF PLANTS

Ching C. Tung, and Jack F. Powers, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 28, 1969, Ser. No. 811,629
Int. Cl. A01n 9/14
U.S. Cl. 71—103 **2 Claims**

A novel salt of p-nitrobenzenesulfonylurea having the formula



which is formed by the reaction of p-nitrobenzenesulfonylurea with ethanolamine and acetone.

This compound has herbicidal activity.

3,628,947

AGGLOMERATE OF IRON ORE

Fred D. DeVaney, Duluth, Minn., assignor to The Shenango Furnace Company

Continuation-in-part of application Ser. No. 666,541, Aug. 24, 1968, now abandoned. This application Dec. 26, 1968, Ser. No. 787,209
Int. Cl. C21b 1/24
U.S. Cl. 75—3 **1 Claim**

A binder for use in agglomerating finely divided iron ore materials, e.g., concentrates, is prepared from an iron-bearing material known on the Mesabi Range of Minnesota as "-paint rock." This is a red or orange, fairly soft and extremely sticky mineral consisting essentially of hematite, kaolinite and quartz, and having a high-ignition loss and high-moisture content. This naturally occurring material is dried—to a moisture content of about 6 percent or lower—at a temperature too low to drive off combined water; and ground to about 200 mesh. The ground dry paint rock is added to and thoroughly mixed with moist iron ore fines (e.g., to moist filtercake of iron ore concentrate), and the mixture is thereafter fed to any conventional balling device where it is rolled into small "pellets" preliminary to being indurated.

The present invention relates to the art of beneficiating ore materials, particularly iron ore materials, and is concerned with improvements in pelletizing ore material fines, particularly iron ore concentrates.

3,628,948

ELECTRIC ARC VACUUM MELTING PROCESSES

Armin M. Bruning, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 15, 1968, Ser. No. 729,146, now Patent No. 3,505,460, which is a division of Ser. No. 407,332, Oct. 29, 1964. Divided and this application Aug. 11, 1969, Ser. No. 848,976
Int. Cl. C22d 7/00; H05b 7/18; C22c 7/00
U.S. Cl. 75—10 **4 Claims**

A process for heating or treating metals without substantially contaminating the metal to be heated or treated comprises introducing the metal into an at least partially evacuated chamber and producing an electric arc therein from the arcing surface-forming tip of a nonconsumable electrode to a surface of opposite polarity while fluid cooling the tip to conduct heat flux therefrom and generating a magnetic field adjacent the tip which causes the arc therefrom to move substantially continuously over the arcing surface, thereby preventing the arc spot from dwelling at any point on the arcing surface a sufficient time to raise the temperature at said point to a value at which substantial sublimation or evaporation of material from the arcing surface takes place.

3,628,949

THERMOCOUPLE EXTENSION WIRE

Teh Po Wang, Cedar Grove, N.J., assignor to Wilbur B. Driver Company

Filed Dec. 16, 1969, Ser. No. 885,588
Int. Cl. C22c 9/06; H01v 1/14
U.S. Cl. 75—159 **1 Claim**

A thermocouple extension wire composition comprising, as expressed in percent by weight; nickel 16–20 percent; manganese 1.30–2.00 percent; cobalt 0.70–1.70 percent; balance copper.

A pair of thermocouple extension wires, one wire having the above composition, the other wire being composed essentially of iron, exhibit a differential electromotive force substantially equal to the electromotive force developed by Type K thermocouple between 32° to 400° F.

3,628,950
IMPROVED METHOD OF REMOVING THE RESIDUAL TONER PARTICLES FROM A PHOTOCONDUCTIVE SURFACE

John F. Wirley, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,704
Int. Cl. G03g *13/14*
U.S. Cl. 96—1.4 R 4 Claims

An improved method of producing xerographic copies which includes the steps of charging a photoconductor with an electrostatic charge, exposing the charged photoconductive surface to discharge portions of the charge in a configuration of image and nonimage areas corresponding to the copy to be reproduced, developing the photoconductive surface with developer material including carrier and electroscopic toner particles triboelectrically arranged and transferring the toner particles from the photoconductive surface to a backing material. The improvement comprises simultaneously cleaning residual toner images from the drum surface and reuse of these residual toner images during image development then transferring the toner particles as aforementioned, and then charging the residual toner particles with a corona having a polarity opposite to the charging polarity on the drum surface prior to drum exposure and recharge to convert positively charged residual toner particles to a negative charge thereby preparing the particles for cleaning by development in the development zone by the carrier.

3,628,951
TRINUCLEAR METHINE DYES FOR USE IN ELECTROPHOTOGRAPHIC SYSTEM

Shi-Kuang Yao, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 1, 1968, Ser. No. 717,986
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.7 5 Claims

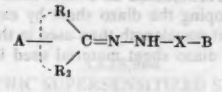
Trinuclear methine dyes and intermediates therefor, prepared by quaternizing oxonols, converting the quaternary compound to an inner anhydride, and condensing the latter with a heterocyclic compound having a reactive methyl or methylene group to yield a trinuclear methine dye; and use of the resulting dye to sensitize photoconductive zinc oxide for electrophotography.

3,628,952
PHOTOGRAPHIC DIFFUSION TRANSFER MATERIALS AND PROCESSES UTILIZING BALASTED HYDRAZONE COMPOUNDS TO RELEASE MOBILE ACID DYES FOR TRANSFER

Walter Puschel, Leverkusen; Justus Danhauser; Karlheinz Kabitzke; Paul Marx; Arnfried Melzer, all of Cologne; Karl-Wilhelm Schranz, Opladen; Hans Vetter, and Willibald Pelz, both of Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 27, 1970, Ser. No. 41,078
Claims priority, application Germany, June 13, 1969, P 19 30 215.9
Int. Cl. G03c *7/00*
U.S. Cl. 96—3 11 Claims

In a color photographic diffusion transfer process are used diffusion-resistant dye-giving compounds, capable of forming diffusible acid dyes on reaction with oxidation products of black-and-white and color-forming developers and having the formula:



wherein
R_1 represents hydrogen, alkyl, aralkyl or amino;
R_2 represents alkyl, aralkyl, aryl, acyl or amino, or
R_1 and R_2 together represent the ring members required to complete an isocyclic or heterocylic ring;
X represents sulfonyl, carbonyl or a single chemical bond;
A represents a radical rendering resistant to diffusion, and
B represents a dye radical; or
A represents a dye radical and
B represents a radical rendering resistant to diffusion.

3,628,953
THERMORECORDING

Eric Maria Brinckman, Mortsel, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium

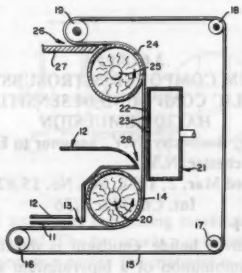
Filed Sept. 27, 1968, Ser. No. 763,354
Claims priority, application Great Britain, Sept. 27, 1967, 44,038/67
Int. Cl. G03c *5/00, 1/72*
U.S. Cl. 96—36.3 21 Claims

Information is recorded by exposing to a heat image of such information a recording material carrying a recording layer consisting essentially of one or more of certain substantially solvent insoluble polymeric materials which, when exposed to heat, are rendered soluble in said solvent after which the image-wise heated layer is developed by contact with a liquid containing the solvent therefor so as to remove the heated areas from the layer. Preferably, the layer contains homogeneously distributed therethrough a dye or pigment which absorbs visible light or infrared radiation and converts the same to heat so that the exposure can be effected by exposing the layer to an image of such radiation.

3,628,954
DIAZO MATERIAL AND VISIBLE LIGHT DEVELOPMENT PROCESS THEREFORE

Jean J. A. Robillard, Zumikon, Zurich, Switzerland, assignor to Keuffel and Esser Company, Morristown, N.J.

Continuation of application Ser. No. 553,151, May 26, 1966, now abandoned. This application Mar. 24, 1970, Ser. No. 20,465
Int. Cl. G03c *5/34, 5/18, 1/62*
U.S. Cl. 96—49 7 Claims



A dry diazo reproduction process for making positive diazo-type copies is described. The process comprises exposing an image pattern and a diazo sheet material containing a diazo compound, an azo coupler, a semiconductor pigment,

preferably sensitized with an organic dye, and a compound which causes upon reduction a shift in pH in the basic region in the diazo sheet material to a UV radiation source and thereafter developing the diazo sheet by exposure to radiation of a different wavelength than used in the exposure step. In addition, the diazo sheet material used in the process is also described.

3,628,955

INHIBITION OF SILVERING IN PHOTOGRAPHIC SOLUTIONS

Grant M. Haist, and David A. Pupo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1968, Ser. No. 708,529
Int. Cl. G03c 5/38
U.S. Cl. 96—61 16 Claims

Certain mercapto organic acids, such as mercaptoisobutyric acid, provide good antisludging action in photographic processing solutions.

3,628,956

PROCESS FOR PREPARING DIRECT POSITIVE IMAGES BY PHOTOSOLUBILIZATION

Eugene Frederick Haugh, Liftwood, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 688,996, Dec. 18, 1967, now abandoned. This application Oct. 28, 1968, Ser. No. 771,347
Int. Cl. G03c 5/24
U.S. Cl. 96—64 8 Claims

Process for forming a positive silver halide image by treating an imagewise-exposed, light-sensitive silver halide layer with a photosolubilizing compound, e.g., 2-mercapto-4-phenylthiazole, and then removing the exposed silver halide with a silver halide solvent.

3,628,957

GELATINO-SILVER HALIDE EMULSIONS CONTAINING WATER-SOLUBLE ACRYLAMIDE COPOLYMERS

Simone Franco, Casalgrasso, and Manlio Marini, Savona, both of Italy, assignors to Ferrania, S.p.A., Milan, Italy

Continuation of application Ser. No. 615,923, Feb. 14, 1967, now abandoned. This application Mar. 23, 1970, Ser. No. 20,456
Claims priority application, Italy, Mar. 22, 1966, 31-888
Int. Cl. G03c 1/04
U.S. Cl. 96—87 R 9 Claims

Silver halide gelatin emulsions useful in preparing photographic films having improved covering power using a water-soluble acrylamide copolymer in an amount from 2 to 75 weight percent, based on total weight of gelatin.

3,628,958

BIPYRIDINIUM COMPOUND/NITROSUBSTITUTED N-HETEROCYCLIC COMPOUND DESENSITIZED SILVER HALIDE EMULSION

John A. Haefner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,823
Int. Cl. G03c 1/36
U.S. Cl. 96—101 9 Claims

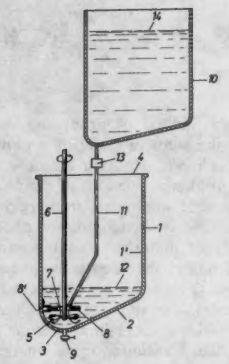
A negative silver halide emulsion is desensitized with a desensitizing combination of a bipyridinium salt and an organic nitrosubstituted N-heterocyclic desensitizer. The emulsion is effectively desensitized for handling in roomlight and the sensitometric properties of the desensitized emulsion are improved with respect to emulsions desensitized with, for example, known organic nitrosubstituted N-heterocyclic desensitizers.

3,628,959

PROCESS FOR THE PREPARATION OF PHOTOGRAPHIC EMULSION

Horst Theilemann, Rudesheimerstrasse 1, 8 Munich 12, Germany

Filed Oct. 16, 1968, Ser. No. 768,021
Claims priority, application Germany, Oct. 23, 1967, P 15 97 643.9
Int. Cl. G03c 1/02
U.S. Cl. 96—94 9 Claims



More sensitive emulsions, improved fineness of grain and improved utilization of silver are obtained in the preparation of photographic emulsions by a procedure which comprises adding a silver nitrate solution to a relatively small portion of a halogen salt solution, to which gelatin has been added and which has been heated to an appropriate temperature for the desired emulsion sensitivity, that is moved or agitated at a relatively high speed with respect to the rest of the halogen salt solution while the solution is in motion.

3,628,960

LIGHT SENSITIVE HALIDE MATERIAL WITH VARIABLE CONTRAST

Herman Adelbert Philippaerts, Mortsel; Hans Josephus Corluy, Berchem, both of Belgium; Herbert Gernert, Munich, and Guenther E. W. Schulz, Holzkirchen, both of Germany, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Mar. 13, 1968, Ser. No. 712,646
Claims priority, application Great Britain, Apr. 21, 1967, 18,542/67
Int. Cl. G03c 1/12
U.S. Cl. 96—124 21 Claims

A composite light-sensitive photographic silver halide emulsion layer having the characteristic of gamma wavelength variability is obtained by means of a mixture of a plurality of differently constituted light-sensitive silver halide emulsion; each of said emulsions having a spectral region to which it is inherently sensitive; said light-sensitive emulsions containing at least one sensitizing dye, each such dye being incorporated in all of the emulsions, to spectrally sensitize the same to a further spectral region outside the inherent region; the emulsions having in the presence of such sensitizing dye spectral responses in the spectral region of inherent sensitivity which vary from one another and also spectral responses in the further spectral region which vary from one another and also spectral responses in the further spectral region which vary from one another, the extent of the variations in the two spectral regions being sufficiently different as to produce a gradation difference of at least 20 percent in the contrast of photographic images obtained by exposing identical samples of the material in the respective spectral regions and developing under identical conditions; the propor-

tions of emulsions in the mixture being so selected in relation to the extent of said differences in sensitivity that gray wedge prints produced by exposure in each of the inherent and further spectral regions and development under identical conditions show different gradations; and the amount of such sensitizing dye being so selected that minor variations in such amount produces no significant change in the ratio of the gradations in the gray wedge prints.

Preferred emulsions are a silver bromoidide emulsion wherein the silver halide grains contain about 1–9 mol percent iodide and the other being a silver chloride-bromide emulsion wherein the silver halide grains contain about 15–85 mol percent bromide and up to about 5 mol percent iodide, and preferred sensitizing dyes are diffusible methine dyes.

3,628,961

GELATIN COMPOSITIONS CONTAINING A TRIAZINE TYPE HARDENER AND AN ALIPHATIC MONO- OR DICARBOXYLIC ACID

Alexander Riebel, Bombay, India; Wolfgang Himmelmann, Opladen-Luetzenkirchen; Karl-Otto Meyer, Leverkusen, both of Germany, and George Frans Van Veelen, Mortsel, Belgium, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 29, 1970, Ser. No. 33,076

Claims priority, application Germany, May 14, 1969, P 19 24 533.1

Int. Cl. G03c *1/30*

U.S. Cl. 96—111 **2 Claims**

Photographic gelatin layers are hardened by trisacryloyl or sulfonyl hydroxyltriazine compounds. The hardening reaction is accelerated by the addition of aliphatic carboxylic acids.

3,628,962

PHOTOSENSITIVE POLYAMIDE COMPOSITIONS

Margaret H. Murray, Stamford, Conn., and Robert M. Leekley, Appleton, Wis., assignors to Time, Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 633,731, Apr. 26, 1967, now abandoned. This application June 17, 1970, Ser. No. 47,106

Int. Cl. G03c *1/70*

U.S. Cl. 96—115 R **9 Claims**

Photosensitive compositions and printing plates formed therefrom wherein nylon is rendered photosensitive by the admixture therewith of a difunctional photoinitiator containing two nonadjacent or nonvicinal keto groups.

3,628,963

PHOTOSENSITIVE COMPOSITIONS

Kiyoshi Akamatsu; Takeaki Hagihara, and Teruhisa Ishido, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1968, Ser. No. 772,036

Claims priority, application Japan, Nov. 9, 1967, 42/71704

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—115 R **7 Claims**

The photosensitive compositions comprising (A) an unsaturated polyester, (B) acrylic acid and (C) a photopolymerization initiator, said unsaturated polyester being produced from an alcoholic component comprising at least one etherdiol having one to four ether-oxygen groups in the main chain and an acidic component comprising at least one unsaturated dicarboxylic acid, anhydride or dimethyl or diethyl ester thereof and having an average molecular weight of 1,500 to 50,000 and a double bond concentration of 1×10^{-2} to 2×10^{-4} mole/g., the amount of (B) acrylic acid being 10 to 80 percent by weight of the total amount of the photosensitive composition and the amount of the photopolymerization initiator being 0.001 to 10 percent by weight of the total amount of the photosensitive composition.

ERRATUM

For Class 96—124 see:
Patent No. 3,628,960

3,628,964

PHOTOGRAPHIC SUPERSENSITIZED SILVER HALIDE EMULSIONS

Keisuke Shiba, and Akira Sato, both of Minami-Ashigara Machi, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

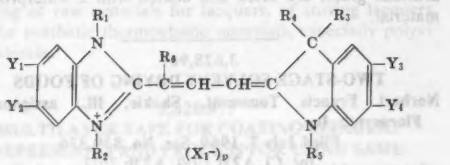
Filed July 17, 1968, Ser. No. 745,360

Claims priority, application Japan, July 17, 1967, 42/46738

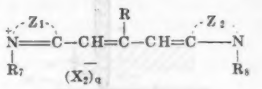
Int. Cl. G03c *1/28*

U.S. Cl. 96—124 **3 Claims**

A photographic silver halide emulsion containing at least one carbocyanine dye represented by the general formula:



and at least one carbocyanine dye represented by the general formula:



The various individual moieties indicated in the above identified structures are defined in the specification.

3,628,965

PROCESS AND APPARATUS FOR PRODUCING CHOCOLATE

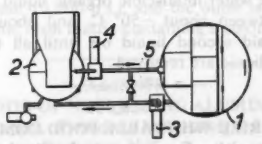
Adolf Maurits Nijkerk, Bussum, Netherlands, assignor to Weiner & Co. N.V., Amsterdam, Netherlands

Filed Jan. 27, 1969, Ser. No. 794,066

Claims priority, application Great Britain, Jan. 26, 1968, 4,275/68

Int. Cl. A23g *1/00*

U.S. Cl. 99—23 **12 Claims**



Process and apparatus for mixing material and diminuting components thereof. The process is a cyclical one in which in each of the recurring cycles the material is passed consecutively through mixing and diminuting means and during cycling is spread into film or sheet form and at least one fluid is incorporated into the filmed or sheeted material. The fluid may be a gaseous medium. The introduction of the gaseous medium causes the removal of unwanted volatile constituents and in edible materials has a taste-changing effect.

3,628,966

PROCESS FOR PRODUCING ENRICHED ARTIFICIAL RICE

Noboru Katsuya; Takaaki Sagara; Reiji Takahashi; Teruo Yoshida, and Takashi Ojima, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 20, 1969, Ser. No. 826,270
Claims priority, application Japan, May 28, 1968, 43/36299
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 R 8 Claims

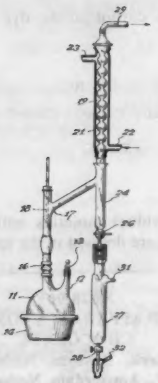
An enriched artificial rice having grains of good mechanical strength and resistant to washing, soaking, and cooking without losing their similarity to natural rice grains is prepared by heating a mixture of amino acids, starch and enough water to make the water content of the mixture 20 percent to 50 percent at 90° to 120° C. for 45 minutes to 1 minute, whereby the starch is semigelatinized. Starch or gluten is thereafter added as a binder to produce a second mixture which is granulated to the shape of rice grains, and the artificial grains are dried and coated with a waterproofing material.

3,628,967

TWO-STAGE SOLVENT DRYING OF FOODS

Norbert Francis Toussaint, Skokie, Ill., assignor to Florasynth, Inc.

Filed July 7, 1969, Ser. No. 839,336
Int. Cl. A23l *1/00*; A23b *7/02*
U.S. Cl. 99—103 8 Claims



Solid food products, for example, onions, apples, strawberries and the like are dehydrated by immersion in a hydrocarbon liquid having a normal boiling point between about 60° C. and 140° C. distilling the liquid together with moisture in the food at a temperature between about 20° C. and about 75° C. while leaving said food wet with said hydrocarbon liquid and thereafter extracting said wet food with a second highly volatile water-immiscible organic liquid having a boiling point between about −50° C. and about 30° C. and volatilizing said second liquid off until all traces of said hydrocarbon liquid are removed.

3,628,968

SPRAY-DRIED WHIPPABLE FOOD COMPOSITION

Peter P. Noznick, Evanston, and Charles W. Tatter, Homewood, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of application Ser. No. 344,825, Feb. 14, 1964, now abandoned , Continuation of application Ser. No. 356,058, Mar. 31, 1964, now abandoned. This application Apr. 8, 1968, Ser. No. 719,766
Int. Cl. A23c *21/00*
U.S. Cl. 99—139 8 Claims

A spray-dried whippable food composition prepared of (1) a polyglycerol partial ester of a higher fatty acid, (2) a carbohydrate from the group of starch, dextrin, gums, and sugars and/or a fat and (3) acid whey.

3,628,969

STARCH-MILK SYSTEMS STABILIZED WITH A BLEND OF HYDROXYALKYL STARCH AND CARRAGEENAN

Robert P. Vilim, Piscataway, and Harvey Bell, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 886,047
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 4 Claims

Starch and milk containing food products which are stable to high-temperature processing are prepared by admixing hydroxyalkyl starch and carrageenan to the components of the food product.

3,628,970

FLAVORING AGENT CONTAINING Z-HYDROXY-3-ETHYLCYCLOPENT-Z-EN-1-ONE

Charles R. Stephens, Jr., East Lyme, and Anibal Torres, New London, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 798,113
Int. Cl. A23l *1/22*; C07c *49/46*
U.S. Cl. 99—140 R 12 Claims

The use of z-hydroxy-3-ethylcyclopent-z-en-1-one in edible food compositions represses undesirable flavor notes and enhances desirable flavor notes.

3,628,971

CEDAR POLYPHENOLS AND THIODIPROPIONIC ACID AS ANTIOXIDANTS FOR USE IN ANIMAL FATS AND VEGETABLE OILS

Arthur Karchmar, Clifton, N.J., assignor to International Telephone and Telegraph Corp., New York, N.Y.

Continuation-in-part of application Ser. No. 690,755, Dec. 15, 1967. This application Feb. 2, 1970, Ser. No. 8,054
Int. Cl. A61k *7/00*; A61l *23/00*
U.S. Cl. 99—163 5 Claims

Mixtures of cedar polyphenols and thiodipropionic acid exhibit synergistic antioxidant effects when added to animal fats and vegetable oils and foodstuffs containing these materials. The amount of the polyphenol component of the mixture should be at least equal to the amount of thiodipropionic acid therein. These cedar polyphenol-thiodipropionic acid additives greatly increase the storage life of fats and oils when added thereto in amounts of at least about 50 per million.

3,628,972

STERILIZATION OF MILK PRODUCTS CONTAINING FAT

Aubrey P. Stewart, Jr., Corning, and Joseph F. Stecker, Creston, both of Iowa, assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,960
Int. Cl. A23c *3/00*
U.S. Cl. 99—212 7 Claims

An improved process for sterilizing milk and milk products containing fat is provided which comprises continuous injection of fat to milk or milk product which has been continuously preheated and has exited a batch or storage tank followed by sterilization. The process results in a product having smaller fat globules which are dispersed throughout said milk product and permits the elimination of homogenization.

3,628,973

MODIFIED PORTLAND CEMENT AND PROCESS

Nathan R. Greening, Glenview; Llewellyn E. Copeland, Des Plaines, and George J. Verbeck, Deerfield, all of Ill., assignors to Portland Cement Association, Skokie, Ill.

Continuation-in-part of application Ser. No. 735,963, June 11, 1968, now abandoned. This application Nov. 20, 1970, Ser. No. 91,518

Int. Cl. C04b 7/54, 13/22

U.S. Cl. 106—89 12 Claims

A modified Portland cement having a high early set strength containing one to thirty percent $11CaO \cdot 7Al_2O_3 \cdot CaX_2$

3,628,974

MICROCRYSTALLINE COLLAGEN, AN IONIZABLE PARTIAL SALT OF COLLAGEN AND FOODS, PHARMACEUTICALS AND COSMETICS CONTAINING SAME

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 436,371, Mar. 1, 1965, now abandoned, Continuation of application Ser. No. 586,969, Oct. 17, 1966, now abandoned. This application Feb. 9, 1970, Ser. No. 14,709

Int. Cl. C09b 7/00

U.S. Cl. 106—125 9 Claims

A new physical form of collagen termed microcrystalline collagen is a water-insoluble but water-dispersible ionizable, partial salt of collagen and is formed by treating undenatured collagen with dilute acid solutions having a pH between about 1.6 and 2.6. Mechanically disintegrating the treated collagen in aqueous liquids until at least 10 percent by weight has been reduced to a submicron size produces dispersions in the aqueous liquids which have an essentially constant viscosity. This new form of collagen may be used in a wide variety of food, pharmaceutical and cosmetic preparations.

3,628,975

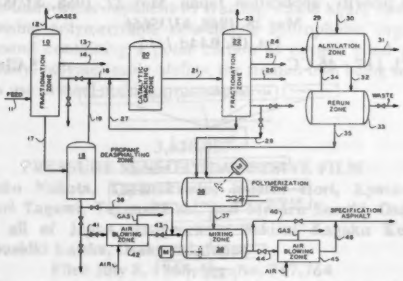
POLYMERIZED DECANT OIL AND ASPHALT PRODUCT CONTAINING THE SAME

Joe Van Pool, Bartlesville, Okla., assignor to Philips Petroleum Company

Continuation-in-part of application Ser. No. 528,915, Feb. 21, 1966, now abandoned. This application Aug. 25, 1969, Ser. No. 857,278

Int. Cl. C08h 13/00, 17/22; C08j 1/46

U.S. Cl. 106—279 9 Claims



Decant oil produced in a catalytic cracking operation is combined with an HF acid soluble oil and polymerized to produce an additive for low-resin asphalts.

3,628,976

PROCESS OF MAKING PERYLENE PIGMENTS

Emil Stocker, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 28, 1968, Ser. No. 771,357

Claims priority, application Switzerland, Nov. 3, 1967, 15447/67

Int. Cl. C09c, 3/02

U.S. Cl. 106—288 Q 13 Claims

A process of making a strongly colored, pure and transparent perylene-3,4,9,10-tetracarboxylic acid pigments, comprising precipitating raw perylene pigment from the aqueous solution of a salt thereof in the presence of a dispersing agent, especially rosin soap, in amounts of 10 to 20 percent by weight calculated on the weight of the perylene pigment at a temperature of about 70°–100° C. by the addition of a mineral acid or an organic acid is described. Dependent on the nature of the acid there is obtained a red pigment (mineral acid) or a brown pigment (organic acid).

Thus conditioned perylene pigments are useful for pigmenting of raw materials for lacquers, of stoving lacquers, and for synthetic thermoplastic materials, especially polyvinyl chloride.

3,628,977

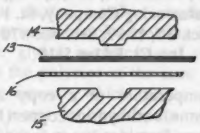
MULTILAYER TAPE FOR COATING INTAGLIO DEPRESSIONS AND PROCESS FOR USING SAME

James E. Deegan, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Oct. 2, 1969, Ser. No. 863,071

Int. Cl. B32b 27/08; B41c 7/02

U.S. Cl. 117—11 10 Claims



An improved multilayer tape is provided for coating or cavity tipping the intaglio depressions of a printing plate or the like as they are formed as from a punch and die embossing operation. The sandwich tape construction combines the best properties of strength, hardness, elasticity, resistance to heat and rupture, and the like, by judiciously combining different resins as layers, each resinous layer furnishing certain of the desirable properties to a degree desired while, however, inherently lacking others. The tape as an overall, complete unit satisfactorily meets all physical demands during use.

The carrier layer has a tensile strength of at least 10,000 p.s.i., the intermediate layer is a polyolefin having a tensile strength less than 10,000 p.s.i. and the outer layer is a fragmentable organic resin matrix containing a coloring pigment.

3,628,978

METHOD OF NUCLEATING ALUMINUM

Edward C. Yackel, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 23, 1968, Ser. No. 761,852

Int. Cl. B44d 1/092, 1/02

U.S. Cl. 117—34 7 Claims

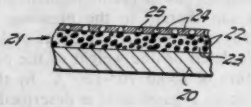
Silver precipitating nuclei are deposited on a grained aluminum support such that said support can be used as a photolithographic receiving surface in a silver salt diffusion process by contacting the support with an alkaline bath and then contacting with an aqueous silver salt solution. In an alternative one-step treatment, an alkaline solution containing the silver salt is used.

3,628,979

TRANSFER ELEMENTS AND METHOD OF MAKING SAME

Douglas A. Newman, Glen Cove, and Allan T. Schlotzhauer, Locust Valley, both of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co. Inc., Glen Cove, N.Y.

Filed June 20, 1968, Ser. No. 738,497
Int. Cl. B41m 5/10
U.S. Cl. 117—36.4 8 Claims



The manufacture of novel pressure-sensitive transfer elements of the squeezeout type which are cleaner to the touch and resistant to producing typewriter roller marks on the copy sheet. The ink-releasing surface of a squeezeout-type ink layer is printed with a very thin layer of a composition comprising a dilute volatile solvent solution of a synthetic thermoplastic resin and a minor amount of a liquid oily material which is incompatible with said resin but which is compatible with the ink vehicle in the squeezeout layer. The volatile solvent is also at least a partial solvent for the resin binder of the squeezeout layer.

3,628,980

HEAT-SENSITIVE COPY SHEET

Joseph A. Wiese, Jr., Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 30, 1969, Ser. No. 870,536
Int. Cl. B41m 5/18
U.S. Cl. 117—36.8 10 Claims

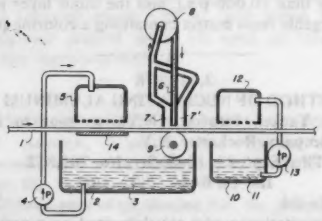
The reaction temperature of a copy sheet containing bis(triphenylphosphine)borohydridocopper(I) as heat-decomposable image-forming component is significantly reduced by incorporating certain nonnitrogenous nickel compounds as catalysts.

3,628,981

LIQUID TONER DEVELOPMENT

Seiji Matsumoto, c/o Fuji Photo Film Co., Ltd. No. 105, Oaza Mizonuma, Asaka-shi Saitama-ken, Asaka, Japan

Filed June 4, 1970, Ser. No. 43,466
Claims priority, application Japan, June 9, 1969, 44/45269
Int. Cl. B05c 1/16; G03g 9/00
U.S. Cl. 117—37 LX 6 Claims



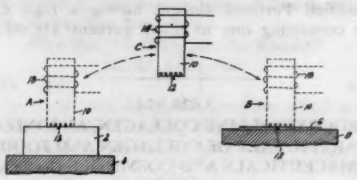
In developing an electrostatic latent-image-bearing surface with a liquid developer containing a highly volatile liquid component, a thin layer of residual liquid developer is formed on the surface. This thin residual developer layer is substantially removed by subjecting the layer to a stream of gas containing a relatively large quantity of the vapor of the highly volatile liquid component. Toner background deposit and image quality is improved with this technique.

3,628,982

METHOD OF APPLYING HOT-MELT GLUE

Charles C. Krug, 607 East 5th St., Summit, Mo.

Filed Dec. 5, 1968, Ser. No. 781,545
Int. Cl. B44d 1/20, 1/02
U.S. Cl. 117—38 7 Claims



A method of applying hot-melt glue to an object consisting of the steps of heating a transfer bar to a temperature high enough to melt the glue, pressing said bar against solid hot-melt glue to coat said bar with a film of liquid glue, and pressing said bar against said object to transfer said glue thereto.

3,628,983

COATING METHOD FOR STRENGTHENING VITREOUS AND VITROCRYSTALLINE BODIES

Lucien F. Leger, Montigny-le-Tilleul, and Jose Lelong, Fleurus, both of Belgium, assignors to Glaverbel S.A., Watermael, Baitsfort, Belgium

Filed Apr. 23, 1968, Ser. No. 723,626
Claims priority, application Luxembourg, Apr. 27, 1967, 53,535; Great Britain, Mar. 19, 1968, 13,246/68
Int. Cl. C03c 21/00
U.S. Cl. 117—40 29 Claims

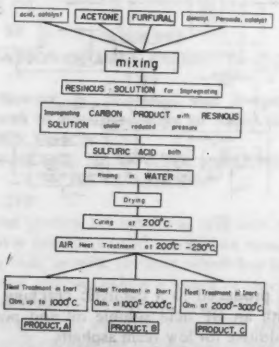
A process for physically strengthening vitreous and vitrocrystalline bodies by applying to at least portions of the surface thereof coatings in which compressive stresses can be produced by appropriate chemical modifications thereof, and by carrying out such chemical modifications and subsequently cooling the coatings.

3,628,984

METHOD FOR THE MANUFACTURE OF HEAT-RESISTANT CARBONACEOUS PRODUCTS HAVING LOW PERMEABILITY

Toshikatsu Ishikawa, and Haruo Teranishi, both of Tokyo, Japan, assignors to Nippon Carbon Company, Limited, Tokyo, Japan

Filed Mar. 10, 1969, Ser. No. 805,653
Claims priority, application Japan, May 27, 1968, 43/35440, May 28, 1968, 43/35666
Int. Cl. B44d 1/46
U.S. Cl. 117—46 CC 5 Claims



Two catalytic additives are added to a mixed solution of acetone and furfural to produce a resinous solution for use in

impregnating a carbonaceous product. A carbonaceous article is impregnated with the solution at a reduced pressure, and the article is immersed in a concentrated sulfuric acid bath. Then, it is withdrawn from the acid bath, rinsed, and dried. Finally, it is subjected to a heat treatment at elevated temperatures to carbonize or graphitize the carbon product impregnated with the resinous solution.

3,628,985

ORGANOPOLYSILOXANE IMPREGNATED FIBROUS SHEET AND METHOD OF PRODUCING SAME

Shibley A. Hider; Walter Kitaj, and Robert E. Martin, all of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Continuation of application Ser. No. 503,760, Oct. 23, 1965, now abandoned. This application June 10, 1969, Ser. No. 834,606

Int. Cl. C03c *25/02*

U.S. Cl. 117—46 **7 Claims**

A fibrous web impregnated with an organopolysiloxane which is cured thereon, wherein the web has superior dielectric and heat-resistant properties and is useful as an insulating medium and, optionally, a rigid fibrous web having its resin and/or fiber portion carbonized. A process of impregnating the fibrous web with the organopolysiloxane in liquid or powder form and curing the siloxane thereon, and, optionally, carbonizing the resin and/or fiber portion of the web whereby the resulting carbonized structure retains its rigidity.

3,628,986

WATER-REPELLENT REDUCED IRON ORE

Marnell A. Segura; Henry R. Savage, and John L. Burroughs, all of Baton Rouge, La., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 845,936, July 23, 1969, which is a continuation-in-part of application Ser. No. 591,124, Nov. 1, 1966. This application Aug. 22, 1969, Ser. No. 852,461

Int. Cl. C23f *9/02*; **B32b** *15/02*

U.S. Cl. 117—49 **15 Claims**

Reduced iron ore, which is water absorbent, is rendered substantially water repellent by treating with a liquid mixture comprising polymerizable silicones, a hydrophobic organic compound containing a polar carbon to oxygen bond and, optionally, polymerizable olefins; the treated iron being suitable for use in steel making processes.

3,628,987

PRESSURE SENSITIVE ADHESIVE FILM

Shinsaku Nakata, Toyonaka-shi; Hitoshi Hori, Kyoto-shi; Kohei Tagami, Toyonaka-shi, and Masaru Suzuki, Osaka-shi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

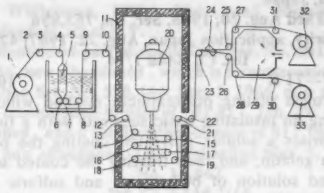
Filed July 8, 1968, Ser. No. 747,764

Claims priority, application Japan, July 12, 1967, 42/45159 Sept. 16, 1967, 42/59814

Int. Cl. C09j *7/02*

U.S. Cl. 117—47 A **8 Claims**

This invention relates to pressure sensitive adhesive films wherein the film surface has graft polymerized thereto a vinyl monomer or a diene monomer and wherein an adhesive material overlays the graft polymerized surface. The adhesive material has a solubility parameter near that of polymers of



the vinyl or diene monomer.

3,628,988

METHOD FOR PROVIDING ARTIFICIAL DENTURES WITH A SOFT HYDROGEL LAYER

Miroslav Stol; Vladimir Stoy; Karel Kliment, all of Prague; Milan Prokes, Olomouc, and Jaromir Mares, Cernosice, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Aug. 1, 1968, Ser. No. 749,343

Claims priority, application Czechoslovakia, Aug. 16, 1967, 5891/67

Int. Cl. B32b *27/08*; **A61c** *13/00*

U.S. Cl. 117—63 **6 Claims**

Mixture for providing a hydrogel layer on a hard denture consisting of a soluble glycol methacrylate or glycol acrylate polymer, a glycol methacrylate or glycol acrylate monomer consisting of 98 to 99.95 percent of the monoester and 0.05 to 2 percent of the diester, a polymerization initiator and a water-soluble solvent capable of dissolving in anhydrous condition the soluble glycol methacrylate or glycol acrylate polymer as well as the polymer of the hard denture. The solvent is used in an amount which causes an approximately equal swelling as water in equilibrium with the resulting hydrogel, from which it is entirely removed by washing the denture in water. The method is also suitable for rebasing old dentures.

3,628,989

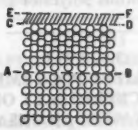
PROCESS FOR THE MANUFACTURE OF GLAZED CERAMIC BODIES, IN PARTICULAR TILES, WITH ONLY ONE FIRING

Ferruccio Solmi, Via Baraldi 29, Modena, Italy

Filed Oct. 1, 1968, Ser. No. 764,260

Int. Cl. C03c *9/00*

U.S. Cl. 117—70 **13 Claims**



In this process of glazing ceramic bodies, especially tiles, the latter are coated in raw, predried condition with a vitreous glaze admixed with about 25–35 percent of refractory clays and/or kaolin having a grain size of one micron or less, and, after drying the glaze, the bodies are fired only once.

3,628,990

ELECTROLESS PLATING PRETREATMENT METHOD

Hatohiko Kamada, and Kouich Tashiro, both of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 20, 1968, Ser. No. 753,896
Claims priority, application Japan, Aug. 22, 1967, 42/53876
Int. Cl. B44d *1/14*
U.S. Cl. 117—71 R 10 Claims

An electroless plating pretreatment method which comprises coating an insulating basic substrate with a first layer which comprises a soluble polyester, coating the polyester layer with a gelatin, and then treating the coated substrate with a mixed solution of bichromate and sulfuric acid or chromic anhydride and sulfuric acid. Any standard electroless process may then be used, including standard activation and sensitization steps.

3,628,991

METHOD OF BONDING EPOXY RESINS TO POLYVINYL CHLORIDE

William C. Thiele, Somerville; Charles H. Barger, Nixon; Joseph J. Thomas, and Robert T. Hucks, Jr., both of Somerville, all of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed Jan. 21, 1969, Ser. No. 792,821
Int. Cl. B44c *3/02*, *3/00*
U.S. Cl. 117—72 12 Claims

In a preferred embodiment, a polyvinyl chloride surface attached through an intermediate thermoplastic to a thermosetting resin, accomplished by a preferred process in which solvated acrylonitrile butadiene styrene copolymer in a methyl ethyl ketone solvent is sufficiently applied to a polyvinyl chloride surface to solvate the surface and to form a surface solution of the polyvinyl chloride and the acrylonitrile butadiene styrene copolymer, drying the surface solution, placing a substantially uncured liquid epoxy resin in contact with the dried surface solution and/or coating of the solvated acrylonitrile butadiene styrene, and curing sufficiently to form a bond between said copolymer and said epoxy resin. Preferably, the epoxy resin is carried on glass fibers, i.e., glass fibers impregnated with the resin, and preferably the polyvinyl chloride surface is cylindrical in shape, in the form of a pipe. Accordingly, a preferred product is a glass fiber-reinforced polyvinyl chloride pipe.

3,628,992

BONDING OF RUBBER TO FIBROUS REINFORCERS

William J. McKillip, Minneapolis, and Clarence N. Impola, Prior Lake, both of Minn., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Dec. 3, 1969, Ser. No. 881,879
Int. Cl. C09j *7/02*
U.S. Cl. 117—76 A 12 Claims

Aromatic and aliphatic polyaminimides are disclosed as constituting a class of polyisocyanate precursors which can be effectively utilized in isocyanate-based adhesive systems for bonding rubber to fibrous polyester and like substrates.

3,628,993

THERMALLY STABILIZED POLYAMIDE BY COATING PARTICLES WITH A CUPRIC SALT OF A COPOLYMER OF ETHYLENE WITH AN UNSATURATED MONOCARBOXYLIC ACID AND ESTER

Ronald E. Gilbert, Shawnee Mission, and Bert H. Clampitt, Overland Park, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 6, 1969, Ser. No. 831,198
Int. Cl. B32h *27/08*; C08q *1/62*
U.S. Cl. 117—100 C 5 Claims

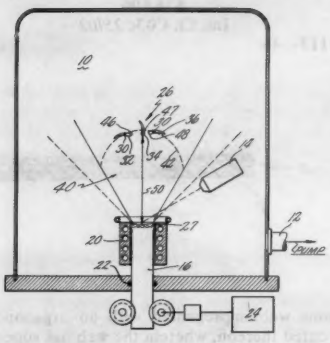
Discrete solid particles of polyamide are coated with a cupric salt of a carboxy-substituted olefin polymer in amounts of from about 0.1 percent to about 3.7 percent by weight to protect the polyamides from degradation during melt forming into manufactured articles.

3,628,994

METHOD OF COATING A PLURALITY OF SUBSTRATES BY VAPOR DEPOSITION

Sol S. Blecherman, Newington, and Nicholas E. Ulion, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 806,870
Int. Cl. C23c *13/00*, *11/00*
U.S. Cl. 117—107.1 4 Claims



In the processes and method for forming protective coatings on metals, particularly the nickel-base and cobalt-base superalloys, by deposition or vacuum, the positioning of a plurality of substrates of complex geometry in the chamber in a predetermined region of vapor isodensity.

3,628,995

FLAME RESISTANT CLOTH

James Economy, Eggertsville; Francis J. Frechette, Tonawanda, and Luis C. Wohrer, Lewiston, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 3, 1968, Ser. No. 764,935
Int. Cl. B32h *27/08*; B32b *27/42*
U.S. Cl. 117—138.8 G 4 Claims

A flame resistant cloth or fabric comprising synthetic fibers prepared from resin condensation products of phenols and aldehydes which can be fiberized and cured. These fabrics may include blends of phenolic resin fibers with other fire-resistant fibers such as wool, silk, polyamide fibers, polyacrylonitrile fibers, mineral and glass fibers, among others.

3,628,996

POLYDIMETHYLSILOXANE RELEASE AGENT

Carl D. Weber, Brecksville, Ohio, assignor to Dow Corning Corporation, Midland, Mich.

Filed June 27, 1969, Ser. No. 837,335
Int. Cl. C08g *47/02*; D21h *1/34*
U.S. Cl. 117—138.8 A 5 Claims

Release agents which give superior release against aggressive adhesives are made by mixing (1) a hydroxyl endblocked polydimethylsiloxane having a viscosity of at least 350 cs. and (2) either from 25 to 75 percent by weight of a triorganosiloxy endblocked dimethylpolysiloxane or from 10 to 75 percent by weight of a polydimethylsiloxane having a triorganosiloxy group on one end and a hydroxyl on the other, (2) having a viscosity of at least 4000 cs. at 25° C. and (3) a cross-linker for (1).

3,628,997

METHOD AND MEANS FOR TREATING FIBROUS MATERIALS AND ARTICLES PRODUCED THEREBY

Vincent Theodore Elkind, Metuchen, and Robert Tweedy Hunter, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 30, 1967, Ser. No. 679,221
Int. Cl. D06m *15/00*; B44d *1/06*
U.S. Cl. 117—121 8 Claims

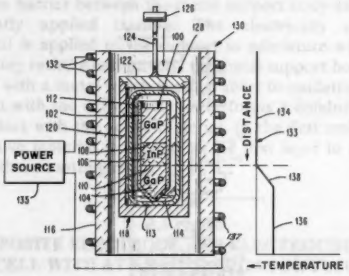
This invention relates to a method and means for achieving a degree of oil and/or water repellency by fibrous materials by exhausting on such materials as textiles and the like acidic nonionic emulsion system containing fluorocarbon polymer, then achieving the desired oil and/or water repellency with subsequent heat curing.

3,628,998

METHOD FOR GROWTH OF A MIXED CRYSTAL WITH CONTROLLED COMPOSITION

Samuel E. Blum, Bronx, and Richard J. Chicotka, Jefferson Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,316
Int. Cl. B01j *7/08*, *7/16*
U.S. Cl. 117—201 17 Claims



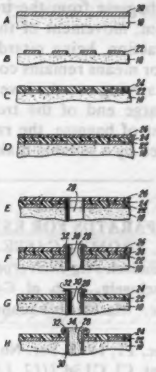
A mixed crystal e.g., $Ga_xIn_{1-x}P$, of controlled composition in the growth direction, either of substantially homogeneous composition or of variable composition, is prepared from the melt or liquid solution by the method of this disclosure. Illustratively, the starting materials are two different pure III–V compounds with different melting points, e.g., GaP and InP, which are to be the components from which the mixed crystal is to be grown. A three-layered composite or charge is fabricated consisting of a layer of the lower melting compound flanked on both top and bottom by layers of the higher melting compound. The composite is established in a crucible which is sealed in a quartz ampul in vacuum to form an assembly. When an overpressure of either an inert or a reactive gas is required, the quartz ampul is sealed inside a stronger container, e.g., of graphite. The assembly is allowed to equilibrate isothermally in a furnace of a given temperature to yield a liquid solution from which the desired solid solution of mixed crystal can crystallize. For crystal growth with homogeneous composition the assembly is lowered slowly into a slightly cooler temperature zone of the furnace and crystallization of the mixed crystal occurs at the lower one of the two liquid-solid interfaces. A single crystal is obtained by epitaxial growth when the substrate is a single-crystal seed. As the liquid becomes depleted in the higher melting component at the growth interface, the dissolution of the higher melting component at the upper liquid-solid interface replenishes the composition of the liquid. This physical process is incrementally small, i.e., it occurs slowly, and results in the composition of the liquid remaining essentially in a steady state of constant composition. Illustratively, $Ga_xIn_{1-x}P$ cylindrical ingots of approximately 1 cm. length × 1.5 cm. diameter are readily produced from the components of GaP and InP by the practice of this disclosure.

3,628,999

PLATED THROUGH HOLE PRINTED CIRCUIT BOARDS

Frederick W. Schneble, Jr., Oyster Bay; John F. McCormack, Roslyn Heights; Rudolph J. Zeblisky, Hauppauge; John Duff Williamson, Miller Place, and Joseph Polichette, Farmingdale, all of N.Y.

Continuation-in-part of application Ser. No. 561,123, June 28, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 598,444, Dec. 1, 1966, now abandoned, and a continuation-in-part of 701,817, Jan. 29, 1968, now abandoned, and a continuation-in-part of 811,142, Mar. 27, 1969, now abandoned. This application Mar. 5, 1970, Ser. No. 16,847
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 10 Claims



This invention relates to new and useful plated through hole printed circuit boards and more particularly to plated through hole printed circuit boards having highly reliable solder joints, and improved methods for producing such boards which include the application of a temporary, strippable solder mask together with a permanent solder mask.

3,629,000

ELECTROGRAPHIC PRINTING ELEMENT

Sangho E. Back, and Gordon A. Murdock, both of Camas, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Feb. 12, 1965, Ser. No. 432,246
Int. Cl. G03g *5/02*
U.S. Cl. 117—218 3 Claims

A copy sheet for electrographic printing comprising a paper base sheet, a layer of photoconductive material extending over one side of the sheet, and a dielectric coating extending over the photoconductive layer adapted to receive an image-defining electrostatic charge. The photoconductive layer is sensitized by exposure to light to render it conductive, and after such sensitizing an image-defining electrostatic charge is deposited on the dielectric layer which is developed to form a visible image.

3,629,001

METHOD AND APPARATUS FOR THE CONTINUOUS COUNTERCURRENT EXTRACTION OF SUGAR FROM BAGASSE

Willy Kaether, Braunschweig-Melverode; Walter Dietzel, and Hans-Dieter Backofen, both of Braunschweig, all of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Dec. 30, 1968, Ser. No. 787,950
Claims priority, application Germany, Jan. 2, 1968, P 16 42 532.4
Int. Cl. C13d *1/12*, *1/04*; B01d *11/02*
U.S. Cl. 127—5 5 Claims

Method and apparatus for the continuous countercurrent extraction of sugar from bagasse or comminuted sugar cane.

In extracting sugar from bagasse the bagasse is subject to the action of extraction liquid in a diffusion trough through which a layer of bagasse is passed by conveyor means, the bagasse being supported on a screen in the bottom of the trough and through which the extraction liquid percolates and is collected in containers beneath the trough, the extraction liquor in the trough being recirculated.

The method of this invention consists in subjecting the layer of bagasse to pressure such as by means of a roller prior to discharge of the bagasse from the trough in order to extract liquid therefrom, movement of the bagasse, when undergoing liquid extraction, being retarded while the rate of travel of the conveyor means remains constant.

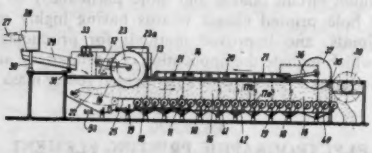
In apparatus for carrying out the invention a roller is positioned in the discharge end of the trough for maintaining pressure on the layer of bagasse, the rate of rotation of the roller being controlled by a suitable braking device.

3,629,002

METHOD AND APPARATUS FOR EXTRACTING SUGAR FROM BAGASSE

Willy Kaether, Braunschweig-Melverode, and Hans-Dieter Backofen, Braunschweig, both of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Dec. 11, 1968, Ser. No. 782,815
Int. Cl. C13d *1/12, 1/08*
U.S. Cl. 127—5 **13 Claims**



A method and apparatus for extracting sugar from bagasse in which extraction is effected by an aqueous liquid, the crude bagasse being fed into one end of a diffusion trough and discharged at its other end. The layer of bagasse is treated in two stages for which purpose the diffusion trough is divided into two zones, an entry zone and a diffusion zone. When in the entry zone the bagasse receives a thermal treatment and before leaving the same is subjected to pressure by passage beneath a pressure and a conveyor roller. In order to facilitate passage of the bagasse layer through the diffusion zone the bottom comprises a series of rollers, certain, preferably alternate, rollers being driven. The roller bed may be made up of large diameter (driven) rollers and relatively small (nondriven) rollers consisting of a perforated drum and serving to collect the extraction liquor so that it can be directly pumped back into the recirculation line to the sprays.

3,629,003

SUGAR PRODUCTS HAVING A COAGULATION PREVENTIVE PROPERTY AND SUPERIOR FLUIDITY

Kiyoshi Suzuki, Tokyo, Japan, assignor to Toyoseito Kabushiki-Kaisha, Tokyo, Japan

Filed Dec. 17, 1969, Ser. No. 885,674
Claims priority, application Japan, Dec. 18, 1968, 43/92779
Int. Cl. C13f *3/00, 5/00*
U.S. Cl. 127—30 **3 Claims**

An intimate admixture of sugar and anhydrous calcium lactate with the anhydrous calcium lactate being mixed with the sugar at the end of the production of the sugar to prevent coagulation of the sugar and to improve its fluidity.

3,629,004

PAINT-REMOVING METHOD

Joseph Cooper, and William James Corbett, both of Cincinnati, Ohio, assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 817,160
Int. Cl. B08b *7/00;* **C23g** *5/02*
U.S. Cl. 134—31 **4 Claims**

A method for removing paint from metal surfaces by boiling a solvent or solvent mixture and contacting the painted metal surface with the vapors of the solvent or solvent mixture. The solvent may include chlorinated liquid hydrocarbons, hydrogenated aromatic solvents, saturated heterocyclic compounds, surface active agents, imidazole derivatives, alkynyl alcohols, glycol ethers, carboxylic acids, ethanolated alkyl guanidine amine complexes, and aliphatic alcohols.

3,629,005

MILKING UNIT SANITIZER

Dallas J. B. Belden, Route 1, Box 311, Rochester, Wash.

Filed Aug. 19, 1968, Ser. No. 753,514
Int. Cl. B08b *3/02*
U.S. Cl. 134—171 **1 Claim**

Each individual treat cup of a suction milking unit can be easily sanitized using the disclosed sanitizing system for injecting a sanitizing solution into the milking chamber thereof. The sanitizing unit includes elongated supply conduits having nozzles positioned at one end for spraying the sanitizing solution into the milking chambers as the nozzles are inserted into the teat cups. In between milkings the sanitizing unit can be used for storing the milking unit. Guide cups adjacent the nozzle end of the conduits provide guiding surfaces for engaging the exterior shell surfaces of the treat cups such that the nozzles will be properly positioned within the milking chamber. A fresh supply of sanitizing solution is used for each sanitation flush of each teat cup.

3,629,006

METHOD TO PROVIDE POSITIVE PLATE FOR LEAD-ACID STORAGE BATTERY CELLS

Stanley Hill, Cherry Hill, N.J., assignor to ESB Incorporated

Filed Apr. 16, 1970, Ser. No. 29,293
Int. Cl. H01m *35/18, 35/30*
U.S. Cl. 136—27 **3 Claims**

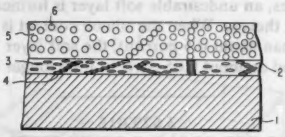
Conventionally made, unformed storage battery plates comprised of a die-cast lead grid and a paste of lead oxide are preformed in a weakly acid or weakly alkaline electrolyte solution to provide a surface layer of lead peroxide high in alpha content on the active material of the plates. The formation of the plates is thereafter completed in a strongly alkaline electrolyte solution to provide plates having a formed active material of substantially all alpha lead peroxide.

3,629,007

RESERVE BATTERY ELECTRODES USING BONDED ACTIVE MATERIALS

Timothy J. Kilduff, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 6, 1969, Ser. No. 847,906
Int. Cl. H01m 39/00
U.S. Cl. 136—27 11 Claims



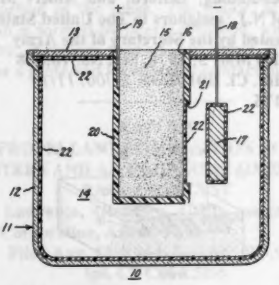
Reserve battery electrodes and a method for preparing said electrodes wherein a metal support body is coated with a substantially noncorrodible electrically conductive material and then overcoated with an active material, for example, lead dioxide, dispersed in a resinous binder. The noncorrodible electrically conductive under layer is applied in an amount sufficient to prevent corroding of the metal support body and sufficient to prevent formation of an interfacial resistance barrier between the metal support body and the subsequently applied coating. The electrically conductive material is applied to the support in admixture with a thermosetting resin. Alternatively, the metal support body is flash plated with a metal which is either inert to oxidation when in contact with the active material or forms a conductive oxide in contact with the active material. In the first embodiment, the active material is applied to the first layer in admixture with a thermosetting resin.

3,629,008

COMPOSITE ELECTRODE AND ELECTROCHEMICAL CELL WITH AT LEAST ONE GAS DIFFUSION ELECTRODE

Willard T. Grubb, Schenectady, N.Y., and Carl E. Cliche, Peabody, Mass., assignors to General Electric Company

Filed May 2, 1968, Ser. No. 725,989
Int. Cl. H01m 27/04, 13/02, 1/02
U.S. Cl. 136—86 6 Claims



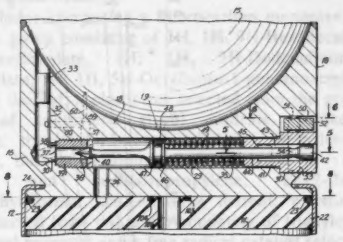
A composite gas diffusion electrode has an electrode body, at least one water-soluble polymeric thickening or gelling agent swellable in an aqueous electrolyte, and a layer of the thickening agent adhering to and covering at least a portion of one of the surfaces of the electrode body. Upon subsequent use in contact with an aqueous electrolyte, the thickening agent swells on the covered surface of the electrode body preventing electrolyte leakage therethrough, preventing drowning of the electrode, reducing loss of any dissolved fuel in the electrolyte, and immobilizing at least partially the electrolyte. Additionally, an electrochemical cell with at least one gas diffusion electrode has the above type of thickening agent covering various portions of the interior structure of the cell. Upon subsequent use in contact with an aqueous electrolyte, the thickening agent swells on covered portions of the interior structure preventing electrolyte leakage therethrough, and immobilizing at least partially the electrolyte.

3,629,009

AUXILIARY COMPONENT PACKAGE FOR OXYGEN-METAL BATTERIES

Roswell J. Bennett, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 7, 1969, Ser. No. 822,553
Int. Cl. H01m 27/00, 17/06
U.S. Cl. 136—86 A 8 Claims



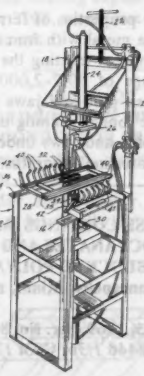
A high-rate oxygen-metal battery is provided with an auxiliary component package for the storage, release and pressure regulation of the oxygen gas. The package includes an oxygen storage tank supported on a basal member which also serves as a housing for all the remaining auxiliary components, i.e., an oxygen-release mechanism, a gas-pressure regulator and a circuit switch.

3,629,010

BATTERY TOP SEALER

Laurence W. Hahn, Tampa, Fla., assignor to The Conrex Corporation, Tampa, Fla.

Filed Dec. 17, 1968, Ser. No. 784,316
Int. Cl. H01m 1/02
U.S. Cl. 136—176 7 Claims



An apparatus and method for sealing a battery cover to an assembled battery comprising the steps of inverting the bat-

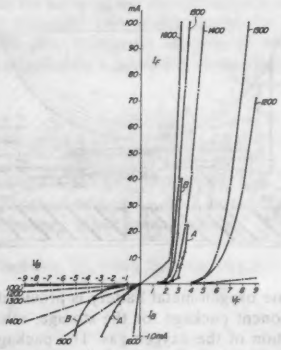
tery on a platform, separately gripping the cover and container of the battery with vacuum pads, exposing the inside of the cover by simultaneously lowering the platform and vacuum pads attached to the cover, coating the cover with a sealant material by dispensing the sealant through nozzles which pivot into communication with the cover, reuniting the cover to the container, and curing the sealant.

3,629,011

METHOD FOR DIFFUSING AN IMPURITY SUBSTANCE INTO SILICON CARBIDE

Atsutomo Tohi, Hirakata-shi; Kunio Sakai, Kadoma-shi; Masakazu Fukai, Osaka, and Yoshinobu Tsujimoto, Kashiwara-shi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sept. 6, 1968, Ser. No. 758,058
Claims priority, application Japan, Sept. 11, 1967, 42/58877
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **4 Claims**



Impurity ions are accelerated under an irradiation condition of ordinary temperature or relatively low temperature and injected into silicon carbide from its surface.

The injected silicon carbide is annealed in a temperature range from 1,600° to 1,200° C. to obtain a PN junction and a luminescent diode based on the PN junction is thereby prepared.

3,629,012

LUBRICATION IMPROVEMENTS VIA DIFFUSION

Edward M. Kohn, Haverford Township, Delaware County, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Sept. 5, 1968, Ser. No. 757,783
Int. Cl. C23f *7/24*
U.S. Cl. 148—6.14 **8 Claims**

The extreme pressure properties of ferrous metals can be increased by coating the metal with iron sulfide or chloride or mixtures thereof then heat treating the coated metal at a temperature in the range of 900°–2,000° F. for ½ to 24 hours. When metal Falex pins and jaws are treated in the above fashion they have longer running times, i.e., up to 11 times, than untreated pins and jaws under the same conditions in a standard Falex testing apparatus.

3,629,013

NITROCELLULOSE COATINGS IMPROVED BY CERTAIN POLYISOCYANATES AND ALDIMINE OR KETIMINE BLOCKED POLYAMINES

Kenneth B. Stokes, Minneapolis, Minn., assignor to General Mills, Inc.

Filed Mar. 3, 1969, Ser. No. 804,005
Int. Cl. B44d *1/36;* **C23f** *17/00*
U.S. Cl. 148—6.15 **11 Claims**

Coatings are prepared from compositions comprising nitrocellulose, polyisocyanates derived from polymeric fat acids and aldimine or ketimine blocked aliphatic polyamines having no unreacted secondary amine groups.

3,629,014

HARD SURFACING OF STEELS

Howard C. Fiedler, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 31, 1969, Ser. No. 889,730
Int. Cl. C23b *5/00;* **C22c** *39/14*
U.S. Cl. 148—31.5 **3 Claims**

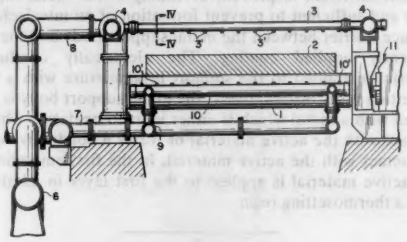
It has been found that when certain steels, such as the hot work die steels which contain relatively high amounts of silicon, are surface hardened by the diffusion of boron into their surfaces, an undesirable soft layer is formed immediately subjacent thereto. When the silicon content is reduced to a value less than about 0.5 percent, the soft layer is reduced in thickness and at about 0.05 percent it no longer is formed.

3,629,015

METHOD FOR COOLING THICK STEEL PLATES

Toshiya Yonezawa, and Hirokazu Sumitomo, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 17, 1969, Ser. No. 807,723
Claims priority, application Japan, Mar. 19, 1968, 43/17873
Int. Cl. B21b *27/06*
U.S. Cl. 148—143 **6 Claims**



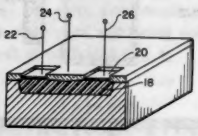
Method for cooling thick steel plates such as slabs and thick plates, while they are not on the rolling lane just after being hot rolled, by showers of cooling water supplied at a rate of 0.1 to 0.6 $m.^3$ per $m.^2$ of the plate per minute simultaneously over the top and bottom surfaces thereof.

3,629,016

METHOD OF MAKING AN INSULATED GATE FIELD EFFECT DEVICE

William B. Glendinning, Belford, and Albert Mark, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Mar. 5, 1970, Ser. No. 16,888
Int. Cl. H01l *7/36, 11/00, 11/14*
U.S. Cl. 148—175 **8 Claims**

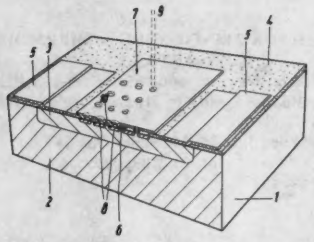


An insulated gate field effect device is made by a vapor etch and epitaxial refill technique. The vapor etch into a first-type conductivity silicon substrate results in an undercutting between windows such that a cavity is developed completely beneath the insulator separating the window regions. The cavity is then refilled epitaxially with silicon of a second conductivity type; a shallow layer of heavily doped silicon of said first-type conductivity epitaxially regrown in the window area; the gate insulator oxide thinned by etching; and gate, source, and drain contacts made.

3,629,017
METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

Fritz Stork, Grobgartach, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm am Danube, Germany

Filed Oct. 1, 1969, Ser. No. 862,776
Claims priority, application Germany, Oct. 1, 1968, P 18 00 212.5
Int. Cl. H01l 7/46
U.S. Cl. 148—179 **10 Claims**



A method of producing a semiconductor device, in which a region of a first conductivity type contains a plurality of regions of a second conductivity type, includes, after formation of the first conductivity type region, masking the semiconductor body to provide a plurality of uncovered areas and alloying into these areas a part of a foil placed on the semiconductor body by means of a specially controlled electron beam and leaving the nonalloyed part of the foil to provide electrical connection between the areas.

3,629,018
PROCESS FOR THE FABRICATION OF LIGHT-EMITTING SEMICONDUCTOR DIODES

George A. Henderson, Richardson, and Gary E. Pittman, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 23, 1969, Ser. No. 793,291
Int. Cl. H01l 7/44
U.S. Cl. 148—187 **13 Claims**

A light-emitting semiconductor diode is made from an N-type crystal of GaAsP or GaP by the selective diffusion of zinc therein to form a PN junction. A special diffusion mask system is employed, to obtain a combination of direct diffusion into an unmasked region, and lateral diffusion beneath a selected portion of the mask. The major, active portion of the junction is formed by lateral diffusion, whereas that portion of the P-region formed by direct diffusion serves primarily as a preferred location for contact metallization.

3,629,019
SOLID PROPELLANT COMPOSITION CONTAINING POLYESTERS AND AN INORGANIC OXIDE BURNING RATE CATALYST

Ralph W. Lawrence, Glendora, Calif., assignor to Aerojet-General Corporation, Azusa, Calif.

Filed Aug. 11, 1964, Ser. No. 388,944
Int. Cl. C06d 5/06
U.S. Cl. 149—19 **2 Claims**

2. A solid propellant composition comprising a cured intimate mixture of a solid inorganic oxidizing salt, said inorganic oxidizing salt being present in an amount of from about 45 percent to about 90 percent by weight of the total propellant composition; an unsaturated polyester resin consisting of the condensation product of a saturated polyhydric alcohol and polycarboxylic acid, said polyester resin being the condensation product of an alkylene glycol, maleic anhydride and sebacic acid heteropolymerized with an unsaturated compound selected from the group consisting of lower alkenes, lower alkynes, phenyl substituted lower alkenes, lower alkyl dienes, lower alkenyl esters of lower alkanoic acids, lower alkyl esters of lower alkanoic acids, lower alkenyl esters of lower alkanoic acids, allyl diglycol carbonate, diallyl diglycollate, and mixtures thereof; and a burning rate catalyst comprising an inorganic oxide selected from the group consisting of the oxides of vanadium, cobalt, iron, chromium, manganese, copper, silver, and mixtures thereof.

3,629,020
CASTABLE FLUOROCARBON COMPOSITE PROPELLANTS

Martin H. Kaufman, and John D. O'Drobinak, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 9, 1964, Ser. No. 403,450
Int. Cl. C06d 5/06
U.S. Cl. 149—19 **8 Claims**

1. A propellant composition comprising
a fluorocarbon binder;
a metal fuel; and
an inorganic oxidizer;
said binder comprising a fluorocarbon monomer selected from the group consisting of 1H, 1H, 9H-Hexadecafluoro-1-nonanomethacylate, 1H, 1H, 7H-Dodecafluoro-1-heptanoacrylate, 1H, 1H, 5H-Octafluoro-1-pentanoacrylate, and mixtures thereof; a plasticizer selected from the group consisting of triethylene glycol dinitrate, pentaerythritol trinitrate, trimethylol ethane trinitrate, diethylene glycol dinitrate, butanediol dinitrate, a copolymer of vinylidene fluoride and perfluoropropylene, bis(2-fluoro-2,2-dinitroethyl)formal and mixtures thereof; a cross-linking agent selected from the group consisting of triallylcyanurate and divinyl benzene; and a free radical catalyst selected from the group consisting of azo-bisisobutyro-nitrile, benzoyl peroxide, dichlorobenzoyl peroxide, and methylethylketone peroxide;
said fuel being a member selected from the group consisting of aluminum, beryllium, and zirconium; and
said oxidizer selected from a group consisting of ammonium perchlorate, sodium perchlorate, potassium perchlorate, sodium nitrate, potassium nitrate and barium nitrate.

3,629,021
SLURRY EXPLOSIVE COMPOSITION CONTAINING NITROGEN-BASE SALT AND TNT, SMOKELESS POWDER OR COMPOSITION B

William M. Lyerly, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

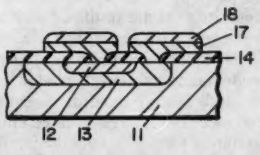
Filed Jan. 21, 1969, Ser. No. 792,814
Int. Cl. C06b 1/04
U.S. Cl. 149—50 **17 Claims**

A thickened water-bearing explosive comprising inorganic oxidizing salt, fuel, TNT, smokeless powder or Composition B and nitrogen-base salt.

3,629,022
USE OF PLATINUM THIN FILMS AS MASK IN SEMICONDUCTOR PROCESSING

Lewis Terry, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 20, 1968, Ser. No. 714,714
Int. Cl. H01l 7/50
U.S. Cl. 156—17 **6 Claims**



Platinum thin films are selectively etched by a method that begins with the deposition of an aluminum film on the

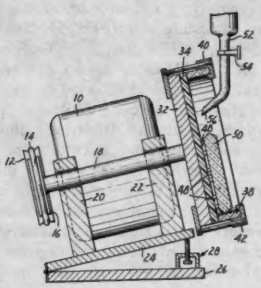
platinum film. The reverse image of that desired in the platinum film is then patterned in the aluminum. The combination is heated to 400° to 500° C. for a time sufficient to form a platinum-aluminum intermetallic compound. The intermetallic compound is then readily removed by etching whereby the remaining platinum is delineated in the reverse of the aluminum pattern.

3,629,023

METHOD OF CHEMICALLY POLISHING CRYSTALS OF II(B)–VI(A) SYSTEM

Wolfgang H. Strehlow, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 17, 1968, Ser. No. 745,618
Int. Cl. H01l 7/00
U.S. Cl. 156—17 13 Claims



A method and apparatus for chemically polishing crystals of the group II(B)–VI(A) system for the periodic table using a mixture consisting essentially of bromine and methanol with the bromine being present in the amount within the range of about 0.05 to about 10 percent by volume of the total solution of the mixture and forming a moving fluid film of the mixture to polish the crystal surface is shown. The apparatus includes a polishing dish and crystal support disk which supports the crystal to be polished and positions the crystal surface to be polished adjacent a plate which forms part of the polishing dish and a dispensing means which supplies a polishing solution between the plate and crystal surface for establishing a fluid film therebetween to chemically polish the crystal surface.

3,629,024

METHOD OF INSULATING ARMATURE COILS

Yoshiaki Kimura; Yoshiharu Sano; Ryoji Kumazawa, and Hisayasu Mitsui, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Horikawa-cho, Kawasaki-shi, Kanagawa-ken, Japan

Filed Feb. 17, 1970, Ser. No. 11,984
Claims priority, application Japan, Feb. 25, 1969, 44/13591
Int. Cl. H01b 3/40, 17/66
U.S. Cl. 156—56 6 Claims

Straight side portions of an armature coil adapted to be received in armature slots are insulated with insulating tapes containing a relatively hard and nonpliable epoxide resinous composition, while looped end portions are insulated with insulating tapes containing a relatively pliable long chain epoxide resinous composition to avoid damage to the insulation structure due to mechanical stress created during insertion of the coil into armature slots. Not only the interlayer insulation but also the ground insulation is formed by the above described two types of insulation tapes.

3,629,025

PROCESS FOR SEALING POLYOLEFIN CONTAINERS

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1968, Ser. No. 764,915
Int. Cl. B65b 7/00
U.S. Cl. 156—69 5 Claims

Process for the sealing of polyolefin containers with an epoxy resin formulation in which the containers are sulfonated prior to the application of the epoxy resin.

3,629,026

METHOD FOR REINFORCING A THERMOPLASTIC ARTICLE

Allan B. Isham, Newark, and Wilbur Shenk, III, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed July 25, 1968, Ser. No. 747,645
Int. Cl. C09j 5/00
U.S. Cl. 156—161 7 Claims

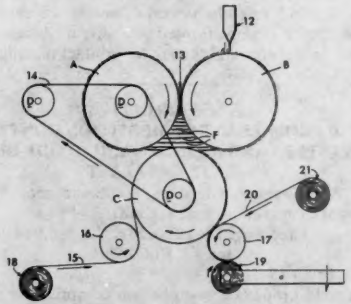
A method of reinforcing thermoplastic structures by controllably overwrapping the structures with continuous glass strands impregnated with a solvent solution of a thermoplastic resin whereby the outside surface of the structure is attacked by the solvent to fuse the impregnated strands to the thermoplastic structure, thereby creating an integrally reinforced structure having no interface between the thermoplastic structure and the thermoplastic resin impregnant and having the strands locked in the structure.

3,629,027

LAMINATION OF FLEXIBLE WEBS WITH FILAMENTARY ADHESIVE MATERIAL

Leo M. Germain, Shawinigan, Quebec, Canada, assignor to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Filed Oct. 21, 1968, Ser. No. 769,243
Int. Cl. D04h 3/16
U.S. Cl. 156—167 5 Claims



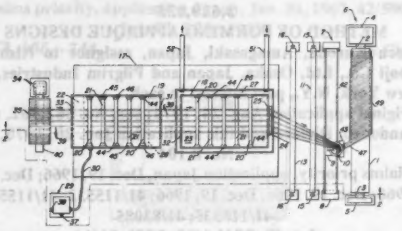
The invention provides method and apparatus for applying molten adhesive, especially the "hot melt" type, to a flexible substrate with subsequent adhesive lamination of the substrate, by generating tacky fine filaments of the molten adhesive between a pair of moving surfaces, depositing the tacky filaments onto the flexible substrate while precluding contact between the substrate and the moving surfaces, then adhesively securing the substrate as a lamina to another lamina by means of the deposited tacky filaments.

3,629,028

METHOD OF MAKING SELF-LUBRICATING FILAMENT WOUND TUBE

Jack Lowrie McLarty, Milwaukee, Wis.; Charles M. Hayes, Hoffman Estates, and Edwin J. Latos, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 29, 1969, Ser. No. 845,684
Int. Cl. B65h *81/00*; B31c *13/00*
U.S. Cl. 156—175 19 Claims



A method of making a filament wound tube having smooth surfaces. Fiber glass filaments are passed through successive resin baths containing particles of a wear resistant additive. These resin baths are deaerated to reduce the existence of voids and pits in the resin in the finished tube. The filaments are flattened and are slowly helically wound in a first layer onto a mandrel. Subsequent layers are overwound about the first layer, the resin is cured, and the filament wound tube formed thereby is removed from the mandrel.

3,629,029

METHOD OF MAKING SECTIONAL RODS

Joseph M. Holahan, Anderson, S.C., assignor to True Temper Corporation, Cleveland, Ohio

Filed Jan. 23, 1970, Ser. No. 5,240
Int. Cl. B31c
U.S. Cl. 156—189 13 Claims

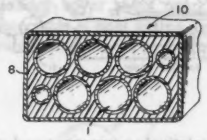
Single piece hollow rod blanks of fiber glass reinforced plastic are formed upon mandrels having stepdown portions intermediate the ends thereof. Mandrels are wrapped in resin impregnated fiber glass cloth having the majority of the fibers disposed parallel with the axes of the mandrels. Upon curing of the plastic, the mandrels are withdrawn and the stepdown portions are cut out of the blanks leaving a plurality of individual sections of hollow sectional rods. The diameters on either side of the stepdown portions of the mandrels are such that a smaller diameter section of each rod is provided with a shank, and a larger diameter section is provided with a socket adapted to receive the shank. Modifications comprise tapering the mandrel on either side of the stepdown portion to provide a tapered shank and socket fit, and providing a reinforcing ply in the area of the shank, socket, and stepdown portions or other area of the rod.

3,629,030

METHOD FOR FORMING A MANDREL AND FABRICATING A DUCT THEREABOUT

Alvin G. Ash, P.O. Box 5893, Gig Harbor, Wash.

Filed June 12, 1968, Ser. No. 736,331
Int. Cl. B29c *1/02*, *1/12*; B65h *81/06*
U.S. Cl. 156—189 3 Claims



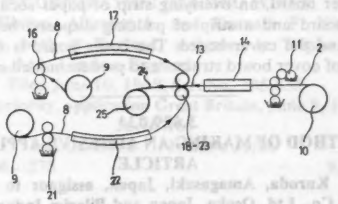
A method of forming a plastic duct of irregular configuration employing an elastic mandrel that is used repeatedly in the manufacture of a plurality of similarly shaped ducts. The mandrel is contracted for separating it from a finished duct and is expanded for fabricating a subsequent duct. The mandrel is formed by placing an inflatable tube or plurality of tubes in a mold with a quantity of uncured elastic material, inflating the tube or tubes, and curing the elastic material to form the composite inflatable mandrel. The tube or tubes have a limited expanded cross section and the mandrel can be inflated to the same size and shape at any time by fully inflating the tube or tubes.

3,629,031

METHOD OF MANUFACTURING A COMPOUND LAMINAR MATERIAL

Jose Guarro Tapis, Avda. Jose Antonio 575, Barcelona, Spain

Filed Dec. 24, 1969, Ser. No. 887,865
Claims priority, application Spain, Dec. 28, 1968, 362,317
Int. Cl. B32b
U.S. Cl. 156—190 4 Claims



A method of manufacturing a compound laminar material is obtained by separately treating with resins, two webs of paper, covering with an adhesive resin both surfaces of a web of synthetic resin, applying the two webs of paper to the web of synthetic resin, one on each side thereof, pressing the resulting triple web and varnishing it, thus obtaining an imitation of parchment obtained from goatskin.

3,629,032

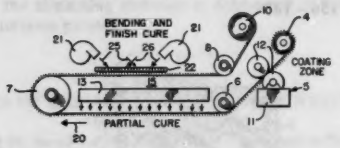
METHOD FOR MAKING FLEXIBLE STRIPS OF MATERIAL HAVING ON ONE SURFACE THEREOF A PILE OF UPSTANDING HOOKING ELEMENTS

George H. Erb, Rutland, Vt., assignor to American Velcro Inc.

Filed July 15, 1969, Ser. No. 841,944
Int. Cl. B32b *3/06*, *7/06*
U.S. Cl. 156—196 5 Claims

A method is disclosed for producing the hooked surface of a hook- and loop-type fastener by treating a starting fabric material having a pile of upstanding threads. The treatment comprises impregnating the threads and pile with a liquid

plastic monomer having the capability of being converted by the application thereto of a suitable form of energy to a flexible solid, applying heat or other suitable form of energy to the underside of the starting material to set the lower portion



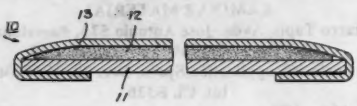
of the threads into a relatively permanent and stiffened shape and then subjecting the other side of said starting material simultaneously to a pressure and heat or other suitable form of energy to bend and set the upper portions of the threads into the form of hooking elements.

3,629,033

METHOD OF MAKING PADDED COVER BOARD STRUCTURE

Leewood C. Carter, Warren Township, and Edward K. Mullen, Westfield, both of N.J., assignors to Book Covers, Inc., Newark, N.J.

Filed Apr. 24, 1969, Ser. No. 818,921
Int. Cl. B32b *3/04*; B31f *1/00*
U.S. Cl. 156—204 **7 Claims**



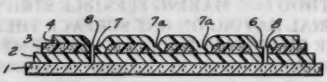
The cover board structure is made with a single or multiply cover board, an overlying strip of paper secured to the cover board and a strip of padding disposed between the paper and the cover board. The cover board is cut from a stream of cover board structure to predetermined sizes.

3,629,034

METHOD OF MAKING AN ADHESIVE APPLIQUE ARTICLE

Minoru Kuroda, Amagasaki, Japan, assignor to Nishizawa Shoji Co., Ltd, Osaka, Japan and Pilgrim Industries, Inc., New York, N.Y.

Original application Jan. 21, 1969, Ser. No. 792,719, Continuation-in-part of application Ser. No. 662,962, Aug. 24, 1967. Divided and this application Jan. 20, 1970, Ser. No. 8,103
Claims priority, application Japan, Dec. 19, 1966, Dec. 19, 1966, Dec. 19, 1966, Dec. 19, 1966; 41/115532; 41/5533; 41/115535; 41/83085
Int. Cl. B32b *31/12, 31/20*
U.S. Cl. 156—219 **8 Claims**



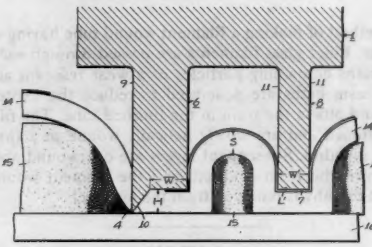
A method of making adhesive applique article wherein one surface of a base layer of sheet material is provided with an adhesive backing a filler layer of resiliently compressible padding material, advantageously but not necessarily a layer of synthetic plastic foam material is interposed between the other surface of one one layer and a cover layer of sheet material. At least these layers are severed along a borderline which is inwardly spaced from their edges and coincides with the outline of the finished applique article, and selected portions of the top and base layers are bonded to one another within the confines of the borderline across the corresponding interposed portions of the foam layer while the selected portions are simultaneously pressed together with concomitant reduction in the thickness of the interposed portions of the foam layer. The remaining portions of the cover layer thus constitute at the exposed side of the latter a raised resilient design filled with the remaining portions of the foam layer and the result is a three-dimensional applique article which can be adhesively affixed to any desired surface.

3,629,035

METHOD OF FORMING APPLIQUE DESIGNS

Minoru Kuroda, Amagasaki, Japan, assignor to Nishizawa Shoji Co., Ltd, Osaka, Japan and Pilgrim Industries, Inc., New York, N.Y., part interest to each

Original application Aug. 24, 1971, Ser. No. 662,962, now abandoned. Divided and this application Jan. 20, 1970, Ser. No. 8,104
Claims priority, application Japan, Dec. 19, 1966; Dec. 19, 1966; Dec. 19, 1966; Dec. 19, 1966; 41/115532; 41/115533; 41/115535; 41/83085
Int. Cl. B31f *1/00*; B32b *31/16*
U.S. Cl. 156—219 **9 Claims**



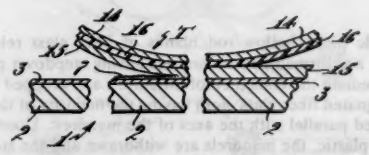
An applique design having its inner and outer contour lines secured to a substrate. The securing is made with a foaming plastic material which is used as an intermediate layer. This material also serves to present stereoscopic and perspective features of the applique design.

3,629,036

METHOD COATING OF PHOTORESIST ON CIRCUIT BOARDS

Calvin Isaacson, Beverley, Mass., assignor to Shipley Company, Inc., Newton, Mass.

Filed Feb. 14, 1969, Ser. No. 799,259
Int. Cl. B29c *27/00*; B32b *31/12, 31/28*
U.S. Cl. 156—241 **12 Claims**



Circuit board base materials, either with or without a layer of copper, have photoresist applied thereto by means which transport said base material past a transfer station. Means in advance of said station apply a liquid solvent for said photoresist to a surface of base material, and means at said transfer station bring into contact with said solvent-coated base surface, a transfer sheet having a layer of photoresist and a backing layer releasably secured thereto whereby said

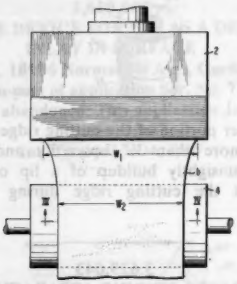
photoresist layer becomes adhered to said surface. Following the transfer station, means are provided for withdrawing said backing layer from said resist layer, which remains secured to the surface of said base.

3,629,037

PROCESS FOR PRODUCTION OF LAMINATED FILM HAVING REDUCED NECK-IN-FORMING PROPERTY

Kohei Masuda; Taku Uchigaki, and Masakazu Arai, all of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1968, Ser. No. 702,087
Claims priority, application Japan, Jan. 31, 1967, 42/5968
Int. Cl. B29c *19/00*
U.S. Cl. 156—244 **6 Claims**



A process for the production of laminated film which comprises extruding from an extruder die a melted resin having a high neck-in-forming property together with another melted resin having a lower neck-in-forming property, then laminating the extruded resin in the form of a melted compounded film with a base material.

3,629,038

METHOD FOR BONDING RUBBER COMPOSITION TO METAL

Kunio Satake, Kawasaki-shi; Tomiho Sone, Yokohama, and Minoru Hamada, Kawasaki-shi, all of Japan, assignors to Asahi Kasei Kagyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 29, 1969, Ser. No. 795,032
Claims priority, application Japan, Feb. 2, 1968, 43/7166
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 **10 Claims**

An adhesive rubber composition comprising a rubber composition consisting essentially of ethylene-propylene terpolymer, sulfur, vulcanization accelerators, a halogenated alkylphenol-formaldehyde resin or alkylphenol-formaldehyde resin together with a metal chloride is shaped into a desired form, placed upon a metal and bonded to the metal by vulcanization; or the adhesive rubber composition is placed between a rubber composition consisting essentially of said terpolymer and a metal, both being shaped in desired forms in advance as an intermediate layer, and the rubber composition and the metal are bonded together by vulcanization. The present bonding method is applicable to the manufacture of car tires, shock absorbers, cables, belts and other industrial articles.

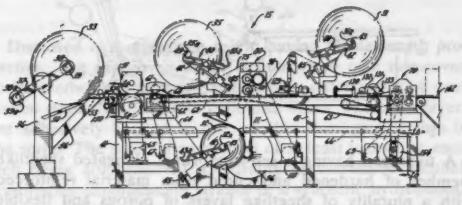
3,629,039

METHOD FOR FORMING DISPOSABLE DIAPERS

Richard H. Frick, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 18, 1968, Ser. No. 776,580
Int. Cl. B32b *5/18*
U.S. Cl. 156—269 **10 Claims**

A method for inserting a leak-preventing barrier of thin impervious material between the fluid pervious cover sheet and the absorbent core of a disposable diaper is disclosed. The barrier, which preferably comprises a narrow strip of thin plastic film affixed between the cover sheet and the backing sheet along a transverse heat seal line at each end of the diaper, is first drawn from a continuous supply roll and cut into lengths twice as long as desired. Each cut length is then placed across the ends of two adjacent core pads moving along a conveyor path in end-to-end relation prior to applying a continuous cover sheet over the pads. When the material between pads is heat sealed and cut transversely to form the individual diapers, the strip is also cut in half so that



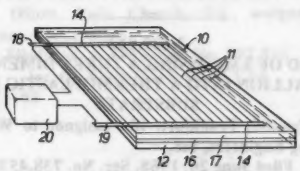
one half forms the barrier for the rear end of the leading diaper, while the other half forms the barrier for the front end of the next following diaper. In its preferred form the barrier supply, cutting and placing apparatus includes a pair of vacuum rolls with valving driven in timed relation to movement of the core pads. Also disclosed is a method and apparatus for preliminarily applying limited quantities of perfume to discrete locations on the core pads before application of the barrier strip such that the perfumed portion of the pad is sandwiched between the impervious backing sheet and the impervious barrier strip.

3,629,040

METHOD OF MAKING LAMINATED PANELS INCORPORATING HEATING WIRES

Brian J. Hinton, Alvechurch, and Kenneth F. Kite, Birmingham, both of England, assignors to Triplex Safety Glass Co., Ltd., London, England

Filed June 10, 1968, Ser. No. 735,638
Claims priority, application Great Britain, June 9, 1967, 26,707/67
Int. Cl. H05b *3/18*; B29c *19/06*
U.S. Cl. 156—275 **9 Claims**



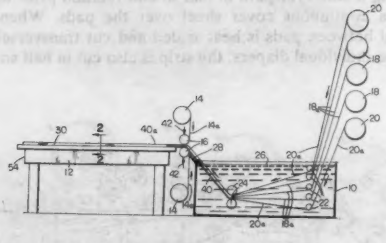
Method of making laminated panels incorporating heating wires including the steps of placing the heating wires on a first sheet, locating the wires in place with a layer of adhesive, placing two feed conductors across the heating wires and laminating the first sheet and a second sheet and the intermediate layer together, then applying electricity at high frequency between the two feed conductors so as to cause a good electrical connection to be formed between at least some of the heating wires and the feed conductors where a good electrical connection did not previously exist.

3,629,041

METHOD FOR MAKING A TOBOGGAN

Samuel M. Shobert, 17760 Dragoon Trail, Mishawaka, Ind.

Filed Aug. 30, 1968, Ser. No. 756,675
Int. Cl. B32b *31/20, 31/18*
U.S. Cl. 156—289 **8 Claims**



A toboggan having a self-supporting, elongated sheetlike member of hardened and cured resin material reinforced with a plurality of sheetlike layers of porous and flexible cloth material of woven fibers. In a specific embodiment, five such layers are used. The outer two layers are of duck material and the inner three layers are of woven glass fiber material. This member is clamped between two pairs of elongated strips which are positioned adjacent to the longitudinally extending peripheral boundaries of said member. The method of the invention comprises the steps of wetting a predetermined number of strands of reinforcing material with the resin, urging the strands together and the resin into the interstitial spaces of said sheets and to control the quantity of resin on the strands, molding the strands to a desired shape, partially curing the resin, cutting the article in the partially cured state to the desired shape, and completely curing the resin. The molding partially curing steps in one specific embodiment includes placing of the strands between two sheets of flexible material which are impervious to the resin so as to enclose the article in this impervious material. One such material is polyethylene terephthalate. The article is then partially cured by simultaneously applying heat and pressure to the article. This application of heat and pressure to the article can be done by pressing the article with a conventional iron or pressing machine. The apparatus of the invention comprises a mold member of rigid material having a mold surface and a peripheral surface on opposite sides of the mold surface. A flexible mold member is placed over the rigid mold member so as to overlie both the mold surface and the peripheral surfaces. The rigid mold member includes means for holding the flexible mold member to its peripheral surface.

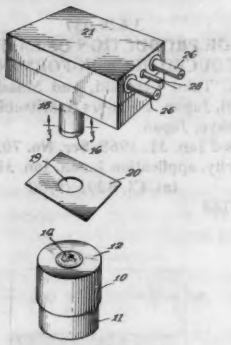
3,629,042

METHOD OF EMBOSSING A THREE DIMENSIONAL MEDALLION INTO A THERMOPLASTIC RESIN SUBSTRATE

John D. Cranfill, Frankfort, Ill., assignor to W. R. Frank Packaging Engineers, Inc.

Filed June 20, 1968, Ser. No. 738,452
Int. Cl. B29c *3/00;* **B31f** *3/00*
U.S. Cl. 156—303.1 **5 Claims**

A method for embossing a piece of metal foil or the like into a thermoplastic resin substrate such as a cap or container to form a three-dimensionally shaped medallion in the substrate. A piece of foil, generally backed with an adhesive, is pressed into the substrate by means of a die having a shape complementary to the desired shape of the medallion. The die, which is maintained at a temperature of from about 375° to 435° F., presses the foil into the substrate at a pressure of at least about 500 p.s.i. for a period of from 0.25 to 3 seconds. The die has a sharp cutting ridge about its periphery to inhibit outward flow of plastic during pressing. The large, flat surfaces of the die are generally stippled to prevent the formation of air-containing blisters between the plastic substrate and the foil medallion. The peripheral cutting ridge of the die can also be used to cut the foil medallion from a larger sheet of foil before it is embossed into the plastic substrate. The outer portion of the cutting ridge generally has a draft of no more than ½° upwardly and outwardly to minimize the unsightly buildup of a lip of thermoplastic material about the cutting ridge during the embossing process.

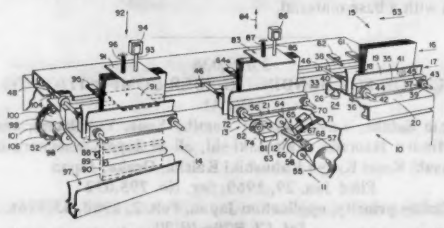


3,629,043

PAPER-BINDING APPARATUS

Charles Nicholas Hoff, Willowdale, Ontario, Canada, assignor to General Binding Corporation (Canada) Limited

Filed Dec. 30, 1968, Ser. No. 787,831
Int. Cl. B41f *13/64*
U.S. Cl. 156—358 **9 Claims**



An apparatus for bonding a stack of papers into pads having a frame, a holder with spaced apart plates to receive the stack of papers therebetween, conveyor means on the frame for supporting the holder and advancing the holder at a constant speed along a predetermined path between a loading station and a discharge station of the path through the following stations, a jogger station for aligning the bottom edges of the stack of papers at the loading station, a tape-applying station for applying a length of tape in contact with the aligned bottom edges of the stack of papers, heat and pressure station to heat the tape and bind the bottom edges of the stack of papers to the tape, and means for bonding portions of the tape to the adjacent outer surfaces of the stack of papers to form the pad which is discharged at the discharge station.

3,629,044

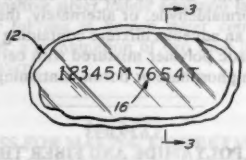
VEHICLE WINDSHIELD CARRYING VEHICLE SERIAL NUMBER

Albert J. Sanger, 105 South Lake Ave., Blackwood, N.J.

Filed Dec. 22, 1969, Ser. No. 887,446
Int. Cl. B32b *17/10*
U.S. Cl. 161—5 **10 Claims**

One or both of the front and rear windshields of a vehicle are constructed so as to carry the vehicle serial number.

Theft of vehicles will be substantially reduced due to the



vehicle's serial number being embedded between the layers of safety glass and thereby inaccessible.

3,629,045

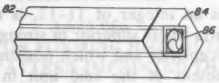
DECORATIVE DEVICE FOR USE AS A DECORATIVE INLAY IN SURFACE

Rudolph Dopera, 18906 Normandie Ave., Gardena, Calif.

Continuation-in-part of application Ser. No. 776,918, Nov. 19, 1968, now abandoned. This application Jan. 15, 1970, Ser. No. 3,107

Int. Cl. B44f *1/04, 7/00*

U.S. Cl. 161—5 **10 Claims**



A decorative device is disclosed which is comprised of an extruded conduit having at least one inner bore adapted to receive decorative material. The decorative device may be placed in a groove or the like to form a decorative inlay. The bore may be of any suitable shape, and is adapted to receive braided material, twisted fiber, metallic cords, ribbons or other such materials of any selected colors or color combinations. The conduit may be transparent or translucent and is of a suitable damage-resistant material to permit its use on tables, bars, and the like, on musical instruments, and in other applications where inlays may be desired. Other than as part of a decorative inlay, the decorative device is applicable, for example, as an ornamental shade pull and the like.

3,629,046

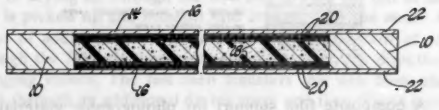
FOAMED PLASTIC CORE DOOR

William B. Gilbert, 32511 Scottsdale, Franklin, Mich.

Filed Dec. 22, 1969, Ser. No. 886,814

Int. Cl. B32b *3/28, 3/26*

U.S. Cl. 161—43 **5 Claims**



A door having a rectangular wooden frame and a core consisting of a slab of foamed polystyrene sandwiched thick between two sheets of corregated cardboard. The uncompressed thickness of the core is greater than that of the frame and a pair of facing sheets of aluminum having dimensions similar to the frame are retained to the outer surfaces of the corregated board with a water-soluble glue and to compress the core to the same thickness as the frame.

3,629,047

NONWOVEN FABRIC

Robert W. Davison, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 2, 1970, Ser. No. 7,932

Int. Cl. A47i *17/00;* **B32b** *5/12, 5/26*

U.S. Cl. 161—57 **9 Claims**

Disclosed is a nonwoven fabric having high-strength properties. The nonwoven fabric is comprised of a nonwoven scrim sandwiched between at least two outer layers of nonwoven staple fibers such as cellulosic fibers. The outer layers are adhesively bonded to one another through openings in the scrim. The scrim is comprised of at least two webs, each web being comprised of a plurality of essentially parallel, continuous monofilament strands of a synthetic hydrophobic polymer. The strands of the scrim are either unbonded or only lightly bonded to one another and to the outer layers whereby they have a substantial degree of movement when stress is applied.

3,629,048

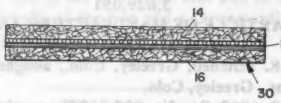
REINFORCED PAPER SHEETING

Robert W. Davison, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 27, 1970, Ser. No. 15,104

Int. Cl. A47i *17/00;* **B32b** *5/12, 5/26*

U.S. Cl. 161—57 **4 Claims**



Disclosed is reinforced paper sheeting having high resistance to tear. An assembly is prepared by sandwiching a nonwoven scrim between at least two plies of undried waterlaid woodpulp fibers. The assembly is then subjected to moderate pressure and subsequently dried.

3,629,049

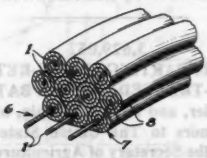
SHAPED PYROLYTIC GRAPHITE ARTICLES

Eugene L. Olcott, Falls Church, Va., assignor to The Susquehanna Corporation

Filed Nov. 8, 1966, Ser. No. 592,846

Int. Cl. B29h *17/28;* **B32b** *3/14*

U.S. Cl. 161—60 **9 Claims**



A shaped pyrolytic graphite article comprising a pyrolytic graphite matrix containing embedded therein at least one reinforcing carbon strand layer. The carbon strand layer comprises a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous carbon strands. The matrix comprises crystallite layers of pyrolytic

graphite nucleated from each of the individual carbon strands and interconnected to form a continuous phase surrounding and interconnecting the individual strands comprising the embedded strand layer.

3,629,050

SHOE STIFFENER BLANKS COMPRISING POLYVINYL CHLORIDE, AN IMPACT MODIFIER AND A LAYER OF HEAT ACTIVATABLE ADHESIVE

Aaron Weinstein, Marblehead, and Frank Scourtas, Newbury, both of Mass., assignors to Pacesetter Products Inc., Salem, Mass.

Filed May 29, 1968, Ser. No. 732,833

Int. Cl. D03d *27/00;* **B32b** *27/08, 27/30*

U.S. Cl. 161—64 **15 Claims**

A thermoplastic shoe stiffener and stiffener blank comprising a nonfabric-containing sheet of thermoplastic polyvinyl chloride having a molding temperature of between 140° F. and 350° F. and containing an impact modifier, preferably linear polyethylene or linear-chlorinated polyethylene, in an amount between 3 and 18 percent by weight of the resin and a heat stabilizer in an amount equal to at least 1 percent by weight of the resin. The polyvinyl chloride contains a lubricant and may contain a plasticizer and filler. The stiffener is hard and tough and highly crush resistant but not brittle. It has excellent molding properties at the aforesaid temperatures, is water and mold proof, has a high flexure and tensile strength, an excellent memory for its molded shape upon deformation and an excellent recovery of its crush resistance after being crushed and then returned to its original shape. Unlike resin-impregnated fabrics, strength is not affected by the direction in which it is cut and it is equally stretchable in all directions. It is coated on one side with a layer of heat activatable adhesive and on the other side with a layer of flock or a layer of heat activatable adhesive.

3,629,051

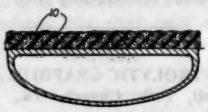
NONSLIP ARTICLE OF MANUFACTURE AND PROCESS FOR MAKING SAME

Wilbur A. E. Mitchell, Greeley, Colo., assignor to Mitchell Tackle, Inc., Greeley, Colo.

Filed June 3, 1969, Ser. No. 829,869The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. A43b *13/22;* **B32b** *5/16;* **C09k** *3/14*

U.S. Cl. 161—162 **15 Claims**



A nonslip surface article and the method of forming the same of an uncured elastomeric matrix impregnated with waste aluminum particles interlocked therein.

3,629,052

PROCESS FOR IMPARTING FLAME-RETARDANCY TO RESIN-TREATED COTTON BATTING

Nestor B. Knoepfler, and Paul A. Koenig, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture

Continuation of application Ser. No. 728,162, May 10, 1968, now abandoned. This application June 26, 1970, Ser. No. 50,306

Int. Cl. D04h *1/58*

U.S. Cl. 161—170 **18 Claims**

Flame retardancy, resiliency, dimensional stability, coherence, and moldability are imparted to fibrous cellulosic batting upon treatment wherein the batting is impregnated with an aqueous mixture containing a certain combination of thermoplastic and thermosetting resins selected for their compatibility with urea-phosphate complexes, or with borated urea formaldehyde; or alternately, the batting is impregnated with an aqueous mixture containing vinyl chloride-type thermoplastic polymer mixtured with certain salts, such as diammonium phosphate or boron-containing compounds.

3,629,053

NOVEL POLYAMIDE AND FIBER THEREOF

Isao Kimura, Suita, and Fumimaro Ogata, Osaka, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

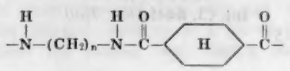
Filed Oct. 15, 1969, Ser. No. 866,745

Claims priority, application Japan, Oct. 23, 1968, 43/77157; Jan. 27, 1969, 44/6173; Jan. 27, 1969, 44/6174; Feb. 18, 1969, 44/12097; Feb. 18, 1969, 44/12098; Feb. 18, 1969, 44/12099

Int. Cl. D02g *3/02;* **C08g** *20/00, 41/04*

U.S. Cl. 161—173 **43 Claims**

A novel polyamide containing in its main molecular chain a recurring structural unit of α,ω-alkylene hexahydroterephthalamide having the general formula,



wherein n is an integer of 11–13, is melt-spinnable and drawable to form fibers superior in strength, Young's modulus and dye receptivity and which possess special luster and hand. The content of the said unit in the polyamide is preferably at least 3 percent by mole. Polymers of this invention include a homopolyamide and copolyamides comprising the said unit and at least one different polyamide unit. In particular, poly (α,ω-alkylene hexahydroterephthalamide/α,ω-alkylene terephthalamide) wherein either of its alkylene group has 11–13 carbon atoms, is excellent in spinnability as well as in drawability. Polymer blend comprising the homopolyamide or copolyamide and at least one aliphatic polyamide can provide fibers with superior properties as well. Furthermore a conjugate filament consisting of the copolyamide and nylon-6, nylon-66 or a polyester is superior in elasticity, recoverability after extension, heat resistance and antistatic property.

3,629,054

COMPOSITE FILM SUPPORT

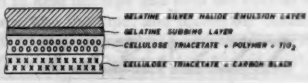
Lodewijk Felix De Keyser, Mortsel; Joseph Antoine Herbots, Edegem, and Robrecht Julius Thiers, Brasschaat, all of Belgium, assignors to Gavert-Agfa NV, Mortsel, Belgium

Filed Aug. 16, 1968, Ser. No. 753,055

Claims priority, application Great Britain, Aug. 16, 1967, 37,763/67

Int. Cl. B32h *23/20*

U.S. Cl. 161—182 **4 Claims**


GELATINE SILVER HALIDE EMULSION LAYER
GELATINE SUBBING LAYER
CELLULOSE TRIACETATE + POLYMER + TiO2
CELLULOSE TRIACETATE + CARBON BLACK

A composite film support for photographic material and the like consists of two hydrophobic layers, one of which is comprised of at least 1% by dry weight of black pigment dispersed in a cellulose ester binder and the other is comprised of at least about 10% by dry weight of white pigment dispersed in a cellulose ester binder plasticized with an isocyanate modified low-molecular-weight polyester. The two layers are in strongly adhering intimate contact at their interface due to the use of low boiling solvents for forming the coating compositions from which both are cast together with the sequence of application in which the second layer is cast

upon the first while the first still contains a substantial amount of low boiling solvent and is thus in a relatively soft but nonflowable condition. The resultant film support can carry a light-sensitive silver halide emulsion layer, an image-receiving layer for use in known silver complex diffusion transfer process, a combination of two such layers, or other photographic layers.

3,629,055

PROCESS FOR MAKING FIRE RETARDANT HARDBOARD CONTAINING AMMONIUM BORATE

Roland Hendrik Riem, Oakville, Ontario, and Wilhelmus Theodorus Albertus Dwars, Clarkson, Ontario, both of Canada, assignors to Abitibi Paper Company Ltd., Toronto, Ontario, Canada

Filed Jan. 16, 1969, Ser. No. 791,768

Claims priority, application Canada, Nov. 15, 1968, 35,278

Int. Cl. D21d *3/00*

U.S. Cl. 162—159 **6 Claims**

A fire retardant hardboard is produced by adding a water-soluble hydrolyzable ammonium borate composition, in a quantity which will provide 1.3 percent to 7.0 percent by weight of boron in the hardboard, to a partially dewatered mat or to a fibrous slurry where the mole ratio of ammonium to borate expressed as the ratio of ammonium hydroxide to boric acid is from 0.3 to 1 to 0.4 to 1 and subsequently applying heat and pressure to form the hardboard.

3,629,056

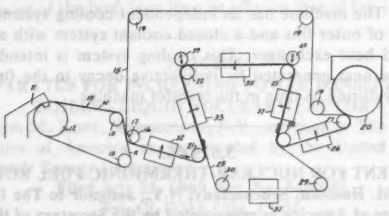
APPARATUS FOR FORMING HIGH BULK TISSUE HAVING A PATTERN IMPRINTED THEREON

George Forrest, Sorel, Quebec, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 3, 1969, Ser. No. 813,082

Int. Cl. D21h *5/06*

U.S. Cl. 162—305 **4 Claims**



Apparatus for forming high bulk tissue with a mesh pattern. A formed uncompacted web is picked up by a felt and is carried by the felt to a fabric mesh. The web is then carried between the felt and mesh about a series of direction changing rollers and along through air driers between the rollers. The mesh imprint is imparted to the web at the bends around the direction changing rollers. A through air drier directs the flow of drying air through the web and toward the felt as the web is picked up and brought into contact with the mesh. A series of additional through air driers direct the flow of air through the felt and toward the mesh between the direction changing rollers. The felt then transfers the web from the mesh through an additional drying stage and then places it on a yankee drier.

3,629,057

CURVED FOIL ABOVE THE FOURDRINIER WIRE

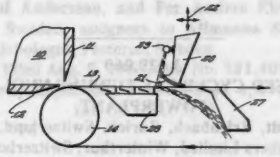
Thomas G. McKie, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 13, 1969, Ser. No. 798,889

Int. Cl. D21f *7/00*

U.S. Cl. 162—312 **6 Claims**

A curved foil member is positioned above the paper web extending transversely across the width of the web and is adjustably supported. A shower head is mounted on the foil support to clean the leading edge of the foil member. The foil member squeezes the web from above and forces air which has been entrained immediately above the path of the moving web down through the web to create a dewatering force.



3,629,058

SUCTION BOX FOR A PAPERMAKING MACHINE

Derrick R. Woodward, Pointe Claire, Quebec, and Daniel Stucki, Lachine, Quebec, both of Canada, assignors to JWI Ltd., Montreal, Quebec, Canada

Filed Jan. 19, 1970, Ser. No. 3,723

Int. Cl. D21f *1/52*

U.S. Cl. 162—363 **10 Claims**

A suction box formed from rigid front and back walls interconnected by a top and bottom set of spaced reinforcing members, a bottom wall interconnecting the front and backwalls and located between and spaced from said bottom and top reinforcing members and an outlet channel formed at at least one end of the box by an end wall of the box, the front and backwalls of the box and a downwardly extending wall projecting from the bottom wall thereby to form a substantially rigid suction box.

3,629,059

FLUID CONTROL AND SAFETY RODS FOR NUCLEAR REACTORS

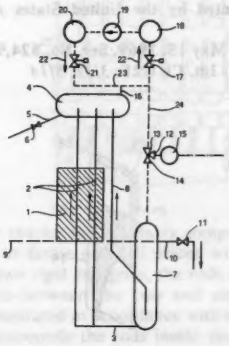
Alberto Agazzi, Ispra,Varese; Armando Broggi,, Induno Olona,Varese; Sergio Galli de Paratesi, Varese, and Luciano Ghiurghi, Varese, all of Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Jan. 21, 1969, Ser. No. 793,928

Claims priority, application Belgium, Apr. 5, 1968, 56807

Int. Cl. G21c *7/02*

U.S. Cl. 176—22 **12 Claims**



A combined safety and control system for a nuclear reactor, comprising tubes passing upwardly through the core of the reactor, a neutron absorbing gaseous atmosphere in the

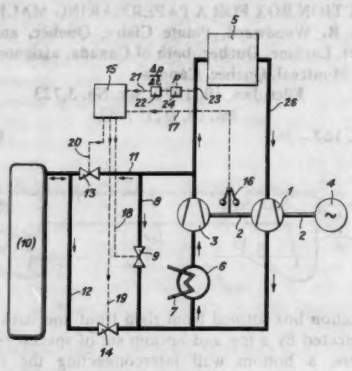
tubes, and means for introducing a liquid neutron poison solution into the tubes in an emergency. The pressure of the gaseous atmosphere is varied to control the power of the reactor.

3,629,060

CLOSED-CYCLE GAS TURBINE NUCLEAR POWERPLANT

David Schmidt, Erlenbach, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 4, 1968, Ser. No. 773,260
Claims priority, application Switzerland, Nov. 8, 1967, 15612/67
Int. Cl. G21c *7/00*
U.S. Cl. 176—20 **1 Claim**



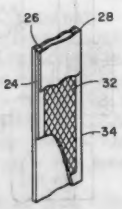
A gas turbine powerplant includes a nuclear source of heat, a gas turbine, a cooler, and a compressor connected into a closed cycle. A bypass is connected around the compressor, and a reservoir for the working substance is connected into the cycle through separately valved lines upstream and downstream of the compressor. A load or speed responsive regulator controls these lines, and also a valve in the bypass. Means are provided to generate a signal representative of the time rate of change of pressure in the cycle in the vicinity of the reactor, and this signal, when it exceeds a threshold value, controls operation of the regulator to limit the pressure variations of the working substance in the reactor.

3,629,061

FUEL SUBASSEMBLY FOR NUCLEAR REACTOR

Richard C. Noyes, Hartford, and Mena G. Andrews, Newington, both of Conn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 15, 1969, Ser. No. 824,926
Int. Cl. G21c *3/32, 5/14*
U.S. Cl. 176—78 **3 Claims**



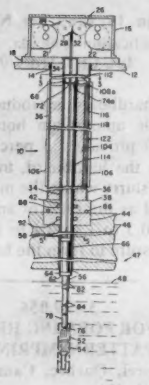
A nuclear fuel subassembly comprising a shroud for enclosing fuel, the walls of the shroud containing spaces for carrying neutron moderating material. A honeycomb for lending structural rigidity is sandwiched in the walls of the shroud, the spaces in the honeycomb containing the neutron moderating material.

3,629,062

TRANSFER MACHINE FOR NUCLEAR REACTOR

Herbert O. Muenchow, Avon, Conn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed May 12, 1969, Ser. No. 823,704
Int. Cl. G21c *19/24*
U.S. Cl. 176—31 **3 Claims**



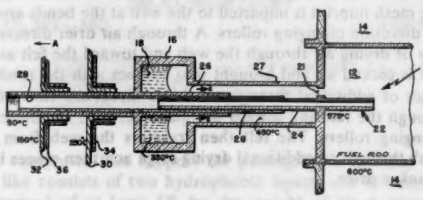
A fuel transfer machine for a liquid metal cooled nuclear reactor in which a retractable guide tube and telescoping lifting arm are utilized to reach down into the reactor to lift out a transfer pot containing a fuel assembly immersed in liquid metal. The machine has an independent cooling system consisting of outer fins and a closed coolant system with an immersed heat exchanger. This cooling system is intended to remove heat generated by radioactive decay in the fuel assembly during its time in the transfer machine.

3,629,063

VENT FOR NUCLEAR-THERMIONIC FUEL ROD

John M. Houston, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 23, 1968, Ser. No. 761,453
Int. Cl. G21c *19/30*
U.S. Cl. 176—37 **2 Claims**



Cesium vapor, ordinarily lost to space, is carried through a venting tube to an area where a lowered temperature causes it to condense onto a wick and to be carried by capillary action back to an area sufficiently high to vaporize it and return it to the Cs vapor region of the fuel rod. The condensing, wicking and evaporation are effected by telescoping sections of a hollow tube. The vapor is conveyed through the tube to

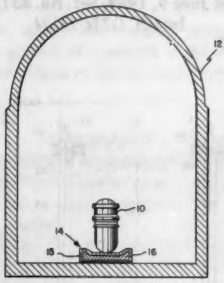
a cooler area, is condensed on a wick inside the outer tube and is vaporized from the wick on the outside of the inner tube.

3,629,064

SAFETY APPARATUS FOR NUCLEAR REACTORS

Samuel M. Zivi, Sherman Oaks, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sept. 9, 1968, Ser. No. 758,454
Int. Cl. G21c 9/00
U.S. Cl. 176—38 4 Claims



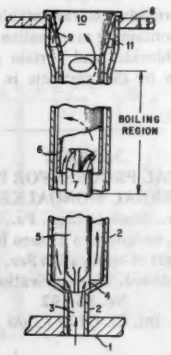
The method of the present invention consists of placing a layer of dense, high-melting temperature material such as unenriched uranium dioxide (UO_2), under a nuclear reactor to support by flotation large masses of molten reactor fuel which might otherwise melt through the floor and the containment shell. The apparatus of the invention is comprised of a dish-shaped layer of unenriched UO_2 or similar material which is encased in a steel housing. The diameter of the dish-shaped layer is greater than the diameter of the reactor core and if located external to the reactor pressure vessel, the diameter of the layer is at least as great as that of the vessel.

3,629,065

APPARATUS FOR INCREASING POWER DENSITY IN A BOILING LIQUID NUCLEAR REACTOR

William M. Knox, Schenectady, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 23, 1969, Ser. No. 844,041
Int. Cl. G21c 3/04, 15/06
U.S. Cl. 176—54 2 Claims



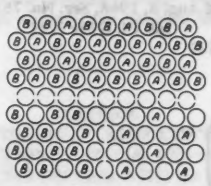
The power output of a boiling liquid reactor is increased by providing means for forming a vortex within the boiling zone of coolant channels.

3,629,066

FUEL ASSEMBLY FOR NUCLEAR REACTORS AND HELICAL SPACERS HAVE BUNDLES OF FUEL PINS

Herbert Olof Andersson, and Per Anders Ekwall, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 9, 1968, Ser. No. 751,407
Claims priority, application Sweden, Sept. 4, 1967, 12212/67
Int. Cl. G21c 3/32
U.S. Cl. 176—76 8 Claims



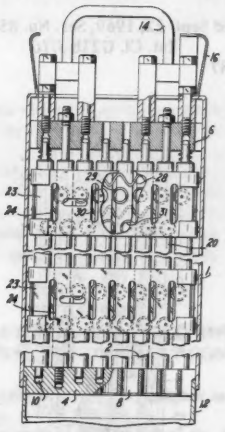
A fuel assembly for nuclear reactors is formed of a polygonal sheathing tube and a bundle of fuel pins inside the tube. The pins are provided with helically wound spacer elements of equal pitch. The fuel pins are of two different types, pins of type B having one more spacer element than those of type A. Each pin of type A is surrounded by six pins of type B, and each fuel pin of type B, except those at the sides of the bundle, is surrounded by alternate pins of types A and B.

3,629,067

SPACER GRID FOR NUCLEAR REACTOR FUEL ASSEMBLY

Paul Demaison; Pierre Menissier, both of Grenoble, and Jean Sionnet, Saint-Egreve, all of France, assignors to Societe Industrielle De Combustible Nucleaire, Paris, France

Filed Nov. 8, 1968, Ser. No. 774,317
Claims priority, application France, May 6, 1968, 150751
Int. Cl. G21c 3/34
U.S. Cl. 176—78 10 Claims



In a nuclear reactor fuel assembly comprising a bundle of rods of fissile or fertile material placed within a casing and supported by two rigid end grids, the rods are maintained at different points between the two end support grids by a spacer grid constituted in accordance with the invention by a frame which surrounds the rods inside the casing and supports at least one layer of parallel helical springs, the turns of said springs being tangent to the rods. Preferably, the layers of springs are four in number, the successive layers being

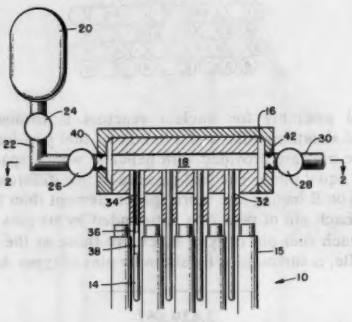
disposed alternately in two directions at right angles to each other whilst the helices of layers having the same direction are relatively displaced by one-half pitch.

3,629,068

GASEOUS CONTROL SYSTEM FOR NUCLEAR REACTORS

Edward Lantz, Strongsville, and Harry W. Davison, Cleveland, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 8, 1968, Ser. No. 751,215
Int. Cl. G21c *7/22*
U.S. Cl. 176—86 G **5 Claims**



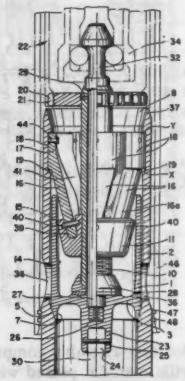
Controlling the reactivity of a nuclear reactor by varying the amount of a neutron-absorbing gas located inside the reactor.

3,629,069

REACTOR TUBE END CLOSURE

James R. Wright, Pinawa, Manitoba, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Sept. 22, 1969, Ser. No. 859,964
Int. Cl. G21b *3/10*
U.S. Cl. 176—87 **4 Claims**



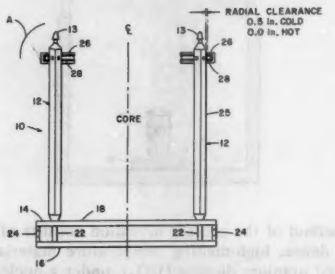
A reactor tube end closure, comprising a cup-shaped closure body having a chamfered edge for engagement with a tapered surface on the inside of a reactor tube. A rotatable threaded spindle secured in the body has an internally threaded collar on it which carries a plurality of outwardly urged, spring-loaded struts. The struts form a collet assembly with each strut having a pad on its outer end for engagement in a recess in the reactor tube. By rotating a serrated wheel on the spindle in one direction the struts can be retracted to disengage the closure from the reactor tube, or by rotating in the other direction urge the seal faces into contact to form a leaktight seal.

3,629,070

TEMPERATURE-ACTIVATED REACTOR CORE CLAMP

Raymond S. Stankiewicz, Ellington, Conn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed June 9, 1969, Ser. No. 831,689
Int. Cl. G21c *13/04*
U.S. Cl. 176—87 **2 Claims**



A nuclear reactor core locking device which holds the fuel assembly loosely for refueling and less loosely against vibration under operating conditions. A U-shaped core retainer band surrounds and is spaced from the core. Contacting boxes are mounted in the channel attached by one or more bimetallic springs to the band. As heating up occurs the boxes are forced into contact with the core and the contact force increases with increasing temperature.

3,629,071

STORAGE-STABLE HEMOSTATIC TRANSFUSION SUSPENSIONS OF BLOOD PLATELETS, GLUCOSE, MAGNESIUM CHLORIDE AND CERTAIN PROSTAGLANDINS

Neelkant C. Sekhar, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 10, 1970, Ser. No. 10,318
Int. Cl. A61k *23/00*
U.S. Cl. 195—1.8 **1 Claim**

The invention provides storage-stable aqueous isotonic saline suspensions containing mammalian blood platelets glucose, magnesium chloride, and certain prostaglandins. The hemostatic function of the platelets is preserved in these suspensions.

3,629,072

MICROBIOLOGICAL PROCESS FOR PREPARATION OF INTERNAL MONOALKENES

Lester E. Casida, Jr., State College, Pa., and Bernard J. Abbott, Edison, N.J., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 736,563, June 13, 1968, now abandoned. This application Nov. 9, 1970, Ser. No. 88,192
Int. Cl. C12d *13/00*
U.S. Cl. 195—28 **13 Claims**

A resting-cell suspension of glucose-grown *Nocardia salmonicolor* cells will oxidize C_{14}—C_{20} alkanes to internal monoalkenes having a cis configuration. Dehydrogenating an individual alkane produces a mixture of monoalkenes with one alkene predominating. Dehydrogenation is limited to the

internal carbon atoms of long chain alkanes, predominantly the carbon atoms near the middle of the molecules. The oxidation of hexadecane by *Norcardia salmonicolor* produces a mixture of olefins comprising cis-7-hexadecene, 80 percent; cis-8-hexadecene, 18 percent; and cis-6-hexadecene, 2 percent.

3,629,073

ACID-ACTIVE LACTOSE

Theodore Cayle, Morganville, N.J., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Apr. 1, 1969, Ser. No. 812,348
Int. Cl. C12k *1/00*
U.S. Cl. 195—62 **2 Claims**

An acid-active, acid-stable lactose enzyme preparation derived from the growth of a culture of *Aspergillus niger* and suitable for the hydrolysis of lactose in acid media.

3,629,074

EVALUATION OF STERILIZING POWER OF DISINFECTANTS AGAINST HOG CHOLERA VIRUS

Teruo Okubo, Tokyo, Japan, assignor to Eisai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1968, Ser. No. 764,993
Int. Cl. C12k *1/06*; C12b *3/16*
U.S. Cl. 195—103.5 R **1 Claim**

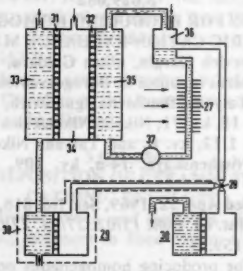
This invention is concerned with a method for the accurate estimation of sterilizing power of antiseptics against hog cholera virus. The method of the present invention is effected by determinating of the critical and least concentration of a given disinfectant in its sterilizing liquor at which the disinfectant still shows sterilization power sufficient to kill the active hog cholera virus. The absence of the active hog cholera virus after the treatment with such diluted liquor may be confirmed by observing when no more metamorphic destruction of the tissue of hog occurs when the tissue is exposed to the treated hog cholera virus in the presence of the virus of Newcastle disease. The method of the present invention may also be applied for comparison of relative sterilizing powers of the various disinfectants available on the market.

3,629,075

METHOD AND APPARATUS FOR ELIMINATING WASTE HEAT AND REACTION WATER TOGETHER FROM FUEL CELLS

Heinrich Gutbier, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Mar. 20, 1968, Ser. No. 714,527
Claims priority, application Germany, Mar. 21, 1967, S 108938
Int. Cl. B01d *3/42*
U.S. Cl. 203—1 **19 Claims**



Method of eliminating waste heat and reaction water together from a fuel cell or battery includes bringing the fuel cell electrolyte into contact with a porous diaphragm through the pores of which water necessary for removing waste heat diffuses only in vaporous form, passing separated water vapor diffusing through the diaphragm to a cooled condensation surface lying opposite and closely adjacent the diaphragm, and depositing thereon condensation water produced from the water vapor, and alternatively returning the condensation water thus formed to the fuel cell electrolyte and removing the condensation water from the fuel cell through a pressure lock.

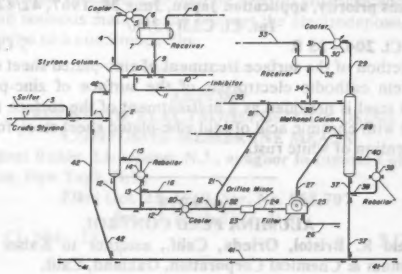
Apparatus for carrying out the foregoing method includes a chamber traversible by the electrolyte, the chamber being defined on at least one side by a porous diaphragm, and a condensation surface communicating with said porous diaphragm through a closed gas chamber therebetween and defined thereby.

3,629,076

DISTILLATION OF STYRENE CONTAINING A POLYMERIZATION INHIBITOR AND CONTACTING THE BOTTOMS STREAM WITH AN ALCOHOL

Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 8, 1970, Ser. No. 70,258
Int. Cl. B01d *3/34*
U.S. Cl. 203—9 **10 Claims**



Recovering polymerization inhibitor, including sulfur, cutback oil, when employed, and undistilled styrene from the bottoms product of a styrene distillation column by treating the bottoms product with alcohol to precipitate polystyrene and part of the sulfur. The remaining liquid, including the remaining portion of the sulfur, is recycled back in the system. This improved method reduces the sulfur disposal problem and also recovers valuable materials.

3,629,077

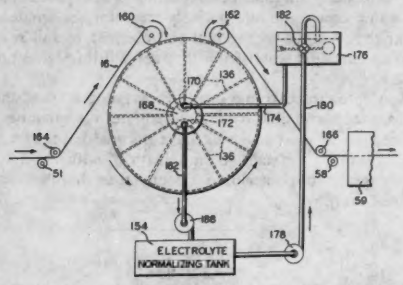
PROCESS FOR PLATING OF STRIPES ON LONGITUDINAL ELECTRICALLY CONDUCTIVE MATERIAL

Thomas Earl Gannoe, Warren, Pa., assignor to Sylvania Electric Products Inc.

Original application Nov. 28, 1967, Ser. No. 686,185, now Patent No. 3,539,490. Divided and this application June 10, 1970, Ser. No. 45,070
No. 45,070
Int. Cl. C23b *5/48*, *5/58*; B01k *3/00*
U.S. Cl. 204—28 **4 Claims**

A process for plating a flexible electrically conductive material such as metallic tape with a thin stripe of metal by passing the moving tape around a groove in the periphery of a disc which is rotated at the same speed in the direction of travel of the tape. Plating solution is supplied to the

peripheral groove of the disc to contact the underside of the tape therein, the solution being confined in a narrow channel



in the groove so as to plate only that area of the tape immediately above the channel.

3,629,078

METHOD FOR SURFACE TREATMENT OF ZINC-PLATED SHEET STEEL

Hideya Okada; Shozo Matsuda, both of Kawasaki, and Misao Ohbu, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed June 27, 1969, Ser. No. 837,331
Claims priority, application Japan, June 30, 1967, 42/42140
Int. Cl. C23f *13/00*
U.S. Cl. 204—35 R **7 Claims**

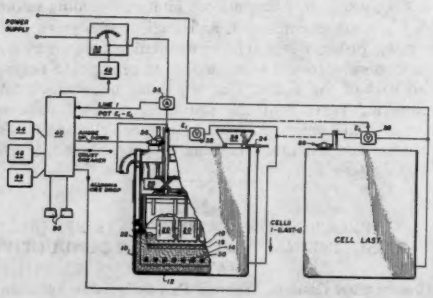
Method of the surface treatment of zinc-plated sheet steel, wherein cathodic electrolysis of the surface of zinc-plated sheet steel is provided as a pretreatment of the surface treatment with chromic acid of said zinc-plated sheet steel, for the prevention of white rust.

3,629,079

ALUMINA FEED CONTROL

Donald R. Bristol, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 23, 1968, Ser. No. 707,747
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 **6 Claims**



A method of controlling the feeding of alumina to a reduction cell and apparatus therefor. The method comprises the steps of producing a gradient variation in the supply current fed to the cells and obtaining at least one measurement of the voltage and the current across the cell for a first value of the current gradient and obtaining at least a second measurement of the voltage and current across the cell for a different value of the current gradient. An indication of the alumina concentration is derived from the first and second current and voltage current measurements. An amount of alumina which is related to the determined value of alumina concentration and which will restore the desired operating alumina concentration is then added to the cell.

3,629,080

ELECTROCHEMICAL MERCURATION OR ORGANIC COMPOUNDS

Norman Louis Weinberg, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 13, 1969, Ser. No. 865,951
Int. Cl. C07b *29/08*
U.S. Cl. 204—72 **14 Claims**

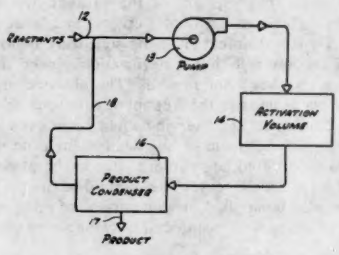
Electrosynthesis of compounds from olefins having useful functions such as hydroxy, amido, alkoxy, etc., and containing the readily replaceable organo-mercury function. Aromatics react also to give organomercurials.

3,629,081

METHOD OF PRODUCING METASTABLE GASEOUS CHLORINE OXYGEN COMPOUNDS WITH NUCLEAR FISSION FRAGMENTS

Ray W. Carpenter, Danville, Calif., assignor to General Tire and Rubber Company, Akron, Ohio

Filed Aug. 24, 1965, Ser. No. 482,233
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 **7 Claims**



1. A method of synthesizing metastable oxygen-chlorine compounds comprising the steps of passing nuclear fission fragments through at least one of the reactants gaseous chlorine and gaseous oxygen to activate at least one thereof, mixing the activated reactant with the other reactant to form the product compound, and condensing the product compound from the gaseous mixture by cooling.

3,629,082

PROCESS FOR PRODUCING HOMOGENEOUS POLYMERIC CATION-EXCHANGE MATERIALS

Valentin Alexeevich Kargin, ulitsa Gaidara, 7, kv. 4; Elena Pavlovna Cherneva, ulitsa B. Dorogomilovskaya, 58, korpus 1, kv. 21; Tatyana Danilovna Ignatovich, Prospekt Mira, 124, korpus 15, kv. 71; Nikolai Nikolaevich Tunitsky, ulitsa Chaplygina, 1/12, kv. 8, and Tatyana Nikolaevna Toroptseva, 3 Mytischenskaya, 14-a, kv. 109, all of Moscow, U.S.S.R.

Filed Apr. 22, 1969, Ser. No. 818,388
Int. Cl. C08f *15/02, 27/04, 27/00*
U.S. Cl. 204—159.14 **3 Claims**

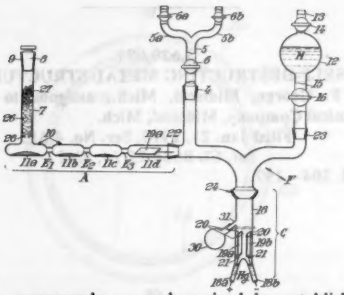
A process for producing homogeneous polymeric cation-exchange materials from a solution or a melt of a copolymer of 2.8 moles of sodium ethylenesulfonate and 2.4 moles of acrylic acid, followed by treatment with fast electrons at a dose rate of 0.2 to 0.7 Mrad per second for a period of 2 to 5 minutes.

3,629,083

PROCESS OF POLYMERIZATION IN AN ELECTRIC FIELD AND NEW PRODUCTS OBTAINED THEREBY

Marcel Brendle, Wittenheim, France, assignor to Centre National De La Recherche Scientifique, Paris, France

Filed Aug. 30, 1968, Ser. No. 756,571
Claims priority, application France, Aug. 31, 1967, June 11, 1968; 119564, 154610
Int. Cl. B01k *1/00*
U.S. Cl. 204—165 10 Claims



Organic compounds are polymerized by establishing an electric field within the monomer between electrodes the surfaces of which are composed of substances which can form π-complexes with the organic compounds. Such substances include metals, notably alkali and alkaline earth metals, iron, copper, titanium or brass, or oxides such as copper oxide. Metals employed as electrode surfaces are preferably of imperfect crystalline structure, being for example, amalgamated. Polymers produced from benzene, toluene, tetrahydrofuran, styrene and pyridine are described, as well as their infra-red spectra.

3,629,084

METHOD OF IMPROVING THE TACK OF RUBBERS

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 718,225, Apr. 2, 1968. This application June 19, 1969, Ser. No. 834,910
Int. Cl. B01k *1/00*
U.S. Cl. 204—168 8 Claims

This invention relates to a method of improving the tack of rubbers, such as ethylene-propylene polymers, in a relatively short period of time by adding thereto a tackifier and subjecting the resultant compositions to an electric discharge.

3,629,085

PHOTOCHEMICAL PURIFICATION OF 1,2-DICHLORETHANE

Guillaume Coppens, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Dec. 13, 1968, Ser. No. 783,595
Claims priority, application Belgium, Dec. 19, 1967, 52302
Int. Cl. B01j *1/10*
U.S. Cl. 204—163 R 10 Claims

Trichlorethylene, a contaminant of 1,2-dichlorethane, is removed from the latter so that higher rates of conversion to vinyl chloride can be effected.

3,629,086

ANODIC DEPOSITION OF CERAMIC FRIT WITH CATIONIC ENVELOPE

George E. F. Brewer, Novi, and Robert A. Swider, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 825,589, May 19, 1969. This application Dec. 12, 1969, Ser. No. 884,445
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 1 Claim

An improved method is provided for electrodepositing particulate ceramic frit upon an electrically conductive substrate which comprises enveloping the frit particles with a cationic resin, forming an aqueous dispersion of the thus coated frit and an anionic binder resin, and anodically depositing the coated frit and the anionic binder resin upon the substrate. The coated substrate can then be fired to volatilize and drive off all resinous material and convert the electrodeposited frit particles to a continuous film.

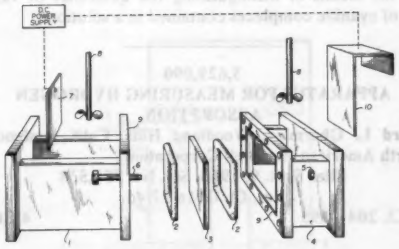
COATING CERAMIC FRIT WITH CATIONIC RESIN
DISPERSING CATIONIC RESIN COATED FRIT AND AN ANIONIC RESIN IN AQUEOUS BASE
ANODICALLY CODEPOSITING COATED FRIT AND ANIONIC RESIN UPON AN ELECTRICALLY CONDUCTIVE SUBSTRATE
FIRING THE COATED SUBSTRATE

3,629,087

PROCESS OF ELECTRODEPOSITION USING COMPOSITE MEMBRANE MEANS

Herbert Rubin, Livingston, N.J., assignor to Inmont Corporation, New York, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,707
Int. Cl. B01k *5/02*, *3/10*
U.S. Cl. 204—181 5 Claims



A composite membrane means and process for its use in electrodeposition of solubilized resins. The membrane means comprises a relatively inert nonconducting porous supporting matrix, preferably polyethylene, and a gel, preferably agar or agarose having a high water content, in the matrix and forming therewith a relatively strong substantially continuous membrane. The gel is substantially inert and has a low resistance to permeation by water and low molecular weight ions formed by ionization of the resins and is substantially impervious to high molecular weight ions formed by ionization of said resins.

3,629,088

SPUTTERING METHOD FOR DEPOSITION OF SILICON OXYNITRIDE

Robert I. Frank, Cambridge, and William L. Moberg, Chelmsford, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 11, 1968, Ser. No. 744,186
Int. Cl. C23c 15/00
U.S. Cl. 204—192 6 Claims

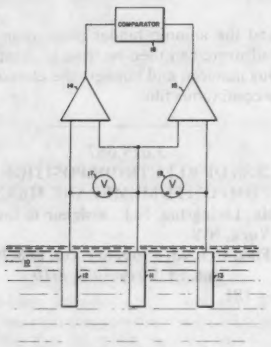
Low temperature deposition of silicon oxynitride on an integrated circuit device is accomplished by the reactive sputtering of high-purity silicon source material in the presence of nitrous oxide and nitrogen. The deposited silicon oxynitride is characterized by an etch rate, breakdown strength and yield higher than those of silicon nitride and a dielectric constant higher than that of silicon oxide.

3,629,089

FREE AND COMBINED CYANIDE MEASURING APPARATUS

James R. Luck, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 22, 1970, Ser. No. 4,838
Int. Cl. G01n 27/46
U.S. Cl. 204—195 4 Claims



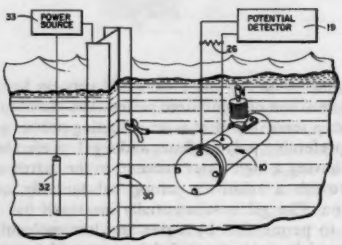
There is disclosed an apparatus for measuring both free and combined cyanide in a solution. The invention also provides for means of distinguishing the quantities of various types of cyanide complexes contained in a solution.

3,629,090

APPARATUS FOR MEASURING HYDROGEN ABSORPTION

Edward L. Ghormley, Woodland Hills, Calif., assignor to North American Rockwell Corporation

Filed Sept. 9, 1968, Ser. No. 758,538
Int. Cl. G01n 27/46
U.S. Cl. 204—195 4 Claims



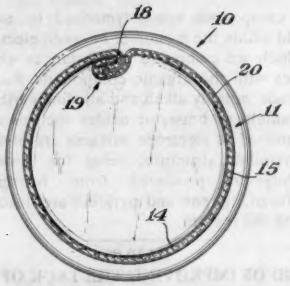
The apparatus of the invention is designed to measure the amount of hydrogen that is absorbed by a metal structure. The apparatus is comprised of a receptacle having a wall section which is made of metal similar to the metal of the structure under observation. The receptacle is filled with a neutral or caustic solution. A cathode which may be a rod of lead oxide is inserted into the caustic solution. The wall section, also in contact with the solution, operates an anode in the caustic solution. Means are provided for measuring the electrical potential between the anode and the cathode, which potential will be a function of the amount of hydrogen absorbed through the anode into the solution.

3,629,091

SELF-DESTRUCTING METAL STRUCTURES

Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1970, Ser. No. 4,613
Int. Cl. B65d 25/14, 7/42
U.S. Cl. 204—197 12 Claims



A metal laminate is provided which will deteriorate after the interior of the laminate is contacted by moisture. Self-destructing containers are fabricated of this structural laminate. The laminate includes at least two layers of dissimilar metals which are electronically connected. One of the metal layers is an aluminum-based metal and the other layer is a metal anodic to the aluminum-based metal, such as a magnesium-based metal. Positioned between the metal layers is at least one layer of an electrolyte-forming composition capable of establishing ionic communication between the metal layers when the composition is contacted with moisture. A preferred electrolyte-forming composition is an inorganic salt containing an alkali metal or an alkaline earth metal, such as sodium chloride. When the electrolyte-forming composition is contacted by sufficient moisture to provide ionic conduction between the metal layers, a galvanic cell is formed having the unique property of simultaneously deteriorating at both the anode and cathode.

3,629,092

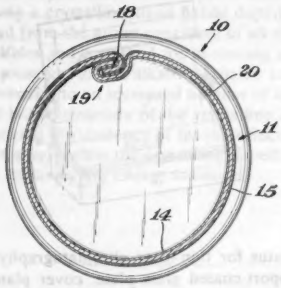
GALVANICALLY DESTRUCTING METAL STRUCTURES

Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1970, Ser. No. 4,614
Int. Cl. B65d 25/14, 7/42
U.S. Cl. 204—197 11 Claims

A metal laminate is provided which will deteriorate at least in part after the interior of the laminate is contacted by

moisture. Selfsdestructing containers are fabricated of this structural laminate. The laminate includes at least two layers of dissimilar metals, the layers being electronically connected and one layer being anodic to the other layer. Positioned between the metal layers is at least one layer of an electrolyte-forming composition capable of establishing ionic communication between the metal layers when the composition is contacted with moisture. A preferred electrolyte-forming composition is an inorganic salt, such as ammonium chloride or sodium chloride. When the electrolyte-forming composition is contacted by sufficient moisture to provide ionic conduction between the metal layers, a galvanic cell is formed in which the anodic metal layer deteriorates by galvanic corrosion.

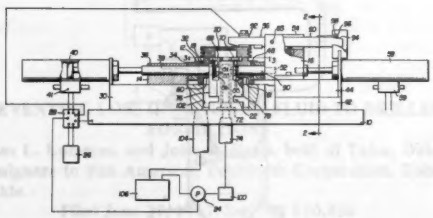


3,629,093

PISTON DEBURRING APPARATUS

David W. Sickels, Plymouth, Mich., assignor to Electrogenics, Inc., Wayne County, Mich.

Filed Oct. 13, 1969, Ser. No. 865,696
Int. Cl. B23p *1/02*; B01k *3/04*
U.S. Cl. 204—224 6 Claims



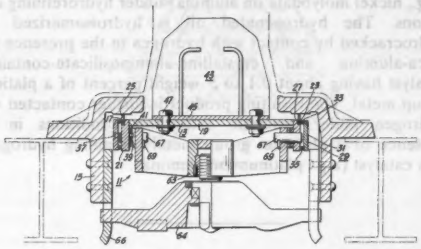
Electrochemical machining apparatus for deburring cylindrical workpieces incorporating a two-part workpiece holder with one part retractable to permit loading and unloading. The electrode fits within the workpiece and delivers both electrolyte and machining current to the areas to be deburred. Also a movable contact for the machining circuit is actuated by the workpiece holder to facilitate loading and unloading.

3,629,094

COKE OVEN DOOR

Leo Silverblatt, Pittsburgh, Pa.

Filed June 30, 1969, Ser. No. 837,703
Int. Cl. C10b *25/06*
U.S. Cl. 202—248 3 Claims



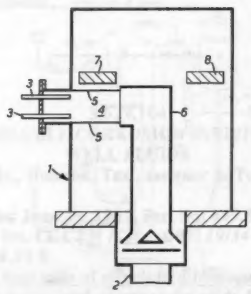
A coke oven door comprises a flexible door frame and panel that supports the knife edge sealing ring and a pair of latch yoke frames. The latch yoke frames are pin connected to the door frame and the sealing ring is clamped to the door frame.

3,629,095

IN OR RELATING TO VACUUM APPARATUS

Geoffrey Norman Jackson, Uckfield, Sussex, and Colin Richard Douglas Priestland, Horsham, Sussex, both of England, assignors to Edwards High Vacuum International Limited, Crawley, Sussex, England

Filed June 21, 1968, Ser. No. 738,873
Claims priority, application Great Britain, June 29, 1967, 30011/67
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 5 Claims



Vacuum apparatus for carrying out a vacuum process within a given region of the chamber, in which gas is introduced to and removed from the region continuously so that the process can be carried out at a selected pressure within the region notwithstanding the fact that the remaining part of the chamber is at a lower pressure.

3,629,096

PRODUCTION OF TECHNICAL WHITE MINERAL OIL

Joseph M. Divijak, Jr., Griffith, Ind., assignor to Atlantic Richfield Company

Filed June 21, 1967, Ser. No. 647,628
Int. Cl. C10g *31/14, 13/02*
U.S. Cl. 208—89 8 Claims

Technical grade white mineral oil is produced by a series of steps including treating a mineral lubricating oil distillate with hydrogen in the presence of a sulfur-resistant catalyst (e.g., nickel molybdate on alumina) under hydrorefining conditions. The hydrogenated oil is hydroisomerized and hydrocracked by contact with hydrogen in the presence of a silica-alumina and crystalline-aluminosilicate-containing catalyst having about 0.1 to 5 weight percent of a platinum group metal. The resulting product is further contacted with hydrogen under aromatic saturation conditions in the presence of a platinum group metal-containing hydrogenation catalyst (e.g., platinum on alumina).

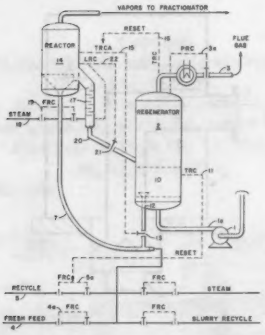
3,629,097

CONTROL SYSTEM FOR FLUID CATALYTIC CRACKING PROCESS

John H. Smith, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of application Ser. No. 756,659, Aug. 30, 1968, now Patent No. 3,513,087, which is a continuation-in-part of application Ser. No. 702,047, Jan. 31, 1968, now abandoned. This application Jan. 6, 1970, Ser. No. 1,002
Int. Cl. C10g *13/18*
U.S. Cl. 208—159 4 Claims

Coke deposition rate in the reactor of a fluid cat cracker is controlled by varying the severity and conversion level in the reactor, while maintaining maximum air rate to the regenerator. The temperature at the outlet of the regenerator, which is an indication of afterburning and amount of coke buildup, is used to control reactor temperature and catalyst-to-oil ratio in the reactor (by resetting the reactor temperature recorder control, which in turn controls the flow of hot regenerated catalyst from the regenerator to the reactor), thus controlling coke deposition to make it commensurate



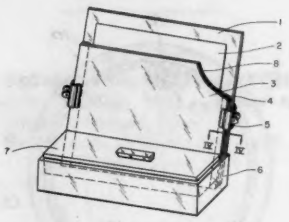
with air supply by controlling the severity and conversion level in the reactor. The temperature in the regenerator catalyst bed is held constant by varying the recycle feed rate to the reactor in response to variations in such temperature.

3,629,098

CONTINUOUS FLOW, PREPARATIVE THIN-LAYER CHROMATOGRAPH

Shoji Hara, Saitama, Japan, assignor to Toyo Roshi Company, Limited, Tokyo, Japan

Filed Sept. 10, 1969, Ser. No. 856,777
Claims priority, application Japan, Sept. 27, 1968, 43/70078
Int. Cl. B01d *15/00*
U.S. Cl. 210—31 8 Claims



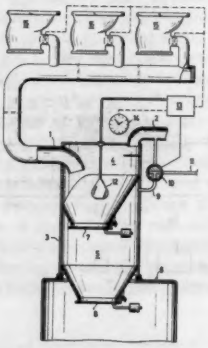
An apparatus for thin-layer chromatography which comprises a support-coated glass plate, cover plates which are same in width as said glass plate and shorter in length than said glass plate and have spacers with same length on their both sides, clips for fitting said glass plate with said cover plate so that the latter plate can be moved up and down, and a solvent container with a lid into which the lower ends of both said glass and cover plates can be immersed.

3,629,099

DISCHARGE DEVICE FOR A VACUUM SEWERAGE SYSTEM

Gustaf Gahmberg, and Reijo Olavi Peltonen, both of Helsinki, Finland, assignors to Oy Wartsila Ab,, Helsinki, Finland

Filed Aug. 19, 1970, Ser. No. 64,999
Claims priority, application Finland, Aug. 20, 1969, 2424/69
Int. Cl. B01d *21/24*
U.S. Cl. 210—104 6 Claims



A discharge device situated at the outlet end of a vacuum sewerage system and having an upper chamber and a lower chamber. The upper chamber is directly connected to a sewer and through a nonreturn valve to the lower chamber. The lower chamber has valve controlled passages leading to a vacuum source and to the open air and is further connected through a nonreturn valve to a sewage collecting tank.

3,629,100

OPTICAL SHUTTER COMPOSITION AND METHOD OF PRODUCING SAME

Herbert N. Hersh, Skokie, Ill., assignor to The United States of America as represented by the Secretary of the Army

Continuation-in-part of application Ser. No. 615,025, Feb. 9, 1967, now abandoned. This application Oct. 10, 1969, Ser. No. 871,427

Int. Cl. F21v *9/06;* G02b *5/24;* G02c *7/10*

U.S. Cl. 252—300 4 Claims

A crystalline doped alkali halide optical shutter composition comprising a crystalline alkali halide doped with an impurity selected from the group consisting of alkali hydroxides and alkali sulfides and a method for producing same are disclosed. The presence of the alkali hydroxide and/or sulfide impurities gives rise to an increased number of ion vacancies in the crystal lattice structure of the crystalline alkali halide, thereby enhancing the tendency of the material to form color producing F-Centers when the crystalline doped alkali halide is exposed to relatively low energy radiation.

3,629,101

WATER-BASE CLAYEY DRILLING FLUIDS

Martin Hille, Bad Soden, Taunus, and Dieter Ulmschneider, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 25, 1969, Ser. No. 802,199

Claims priority, application Germany, Mar. 2, 1968, P 16 08 267.0

Int. Cl. C10m *7/00;* E21b *21/04*

U.S. Cl. 252—8.5 C 6 Claims

Water-base, clayey drilling fluids are made suitable for the drilling of deep wells by addition thereto of a copolymer of vinyl-sulfonic acid and an N-vinyl-carboxylic acid amide or N-vinylipyrrolidone and, optionally, a small proportion of an anion-active vinyl compound that is polymerizable under the action of free radicals.

3,629,102

PREVENTING LOSS OF DRILLING FLUID TO DRILLED FORMATIONS

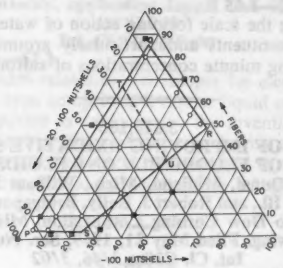
James L. Lummus, and John N. Ryals, both of Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla.

Filed June 29, 1967, Ser. No. 650,056

Int. Cl. C10m *3/08, 1/14*

U.S. Cl. 252—8.5 LC 11 Claims

In well drilling operations, loss of whole drilling fluid to drilled formations is decreased by maintaining in the drilling fluid a three-component mix. The three components are (1) Ground nutshells or equivalent passing the shale shaker screen but retained on a No. 100 U.S. standard sieve; (2) Nutshell flour or equivalent passing a No. 100 sieve; (3) Sugar cane fibers, preferably waterproofed, ground fine enough to pass the shale shaker screen but coarse enough to seal a bed of BB shot when combined within certain limits with the larger granular particles and the flour.



3,629,103

PLASTIC ANTIFRICTION MATERIAL

Vasily Vladimirovich Korshak, ulitsa Gubkina, 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova, 12, kv. 31; Alexandr Petrovich Krasnov, prospekt Kalinina, 31, kv. 28; Alla Nikolaevna Chumaevskaya, Leninsky prospekt, 101, korpus 163, kv. 86; Olga Svyatoslavovna Natsarenus, ulitsa Grimau, 13, korpus 2, kv. 15; Svetlana Vasilievna Vinogradova, Belyaevo-Bogorodskoe, Kvartal 48-a, korpus 6a, kv. 63; Yakov Semenovich Vygodsky, Leninsky prospekt, 101, korpus 135, kv. 38; Vyacheslav Alexandrovich Pankratov, ulitsa Usievicha, 25, kv. 135, and Grigory Lvovich Slonimsky, ulitsa Chkalova, 1/4, kv. 16, all of Moscow, U.S.S.R.

Filed June 23, 1969, Ser. No. 835,785

Int. Cl. C10m *7/34*

U.S. Cl. 252—12 8 Claims

A plastic antifriction material containing a polyimide resin, powdered solid lubricants as fillers, and also polyarylates or aromatic polyamides.

3,629,104

WATER SOLUBLE CORROSION INHIBITORS FOR WELL FLUIDS

Jim Maddox, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 29, 1967, Ser. No. 649,823

Int. Cl. C23f *11/14;* C07l *19/34*

U.S. Cl. 252—8.55 E 2 Claims

Normal and acid salts of substituted imidazolines and saturated aliphatic mono- and dicarboxylic acids for use in compositions of water soluble corrosion inhibitors. Continuous or intermittent application of liquid coatings of these inhibitors on metals, particularly ferrous metals in contact with sweet and sour petroliferous well fluids, form persistent films which afford protection against corrosion, even at elevated temperature.

3,629,105
INHIBITING SCALE FORMATION
Walter J. Weiss, Sugar Land, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Oct. 11, 1968, Ser. No. 766,953
Int. Cl. C02b 5/06
U.S. Cl. 252—8.55 B 6 Claims

Inhibiting the scale forming action of water containing mineral constituents and particularly ground waters by incorporating minute concentrations of sulfonated lignite.

3,629,106
METHOD OF IMPROVING OXIDATIVE STABILITY OF FLUOROSILICONE FLUIDS
George J. Quaal, Midland, Mich., William L. Schaefer, Palatine, Ill., and Robert J. Kelly, Bridgeport, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed May 21, 1969, Ser. No. 826,725
Int. Cl. C10m 3/46, 3/02
U.S. Cl. 252—25 2 Claims

The invention described herein is a lubricating composition containing antimony trioxide in a liquid carrier and is especially suitable for the lubrication of titanium-steel and Monel-steel interfaces. Additionally, it has been found that the addition of antimony trioxide to fluorosilicone fluids tends to stabilize such fluids against oxidation.

3,629,107
METAL-GRAPHITE COMPOSITIONS
Aleksander Jerzy Groszek and Rodney Ernest Witheridge, London, and Charles John Geach, Shepperton, England, assignors to The British Petroleum Company Limited, London, England
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,399
Claims priority, application Great Britain, Mar. 31, 1969, 16,707/69
Int. Cl. C10m 7/04
U.S. Cl. 252—12 14 Claims

Intimate mixtures of oleophilic graphite and a metal are prepared by grinding graphite and the metal together in an organic liquid. The mixtures are useful as solid lubricants and grease-thickeners.

3,629,108
LUBRICANT INHIBITOR
Gerard P. Caruso, New Orleans, La., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Sept. 12, 1968, Ser. No. 759,519
Int. Cl. C10m 3/32, 7/36
U.S. Cl. 252—28 11 Claims

A grease inhibited against oxidation and against inhibitor recrystallization containing a lubricant gelled to grease consistency, an amount of a phenothiazine-type inhibitor sufficient to inhibit oxidation, and a pyrrolidone compound that is liquid phase and in an amount sufficient to prevent large crystals of phenothiazine-type inhibitor from forming. Typically the grease will contain up to one percent by weight of phenothiazine and about the same amount of N-methyl pyrrolidone.

3,629,109
BASIC MAGNESIUM SALTS, PROCESSES, AND LUBRICANTS AND FUELS CONTAINING THE SAME
William C. Gergel, Mayfield Heights, Jack L. Karn, Cleveland Heights, and Laurence E. King, Painesville, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation-in-part of application Ser. No. 785,343, Dec. 19, 1968. This application Sept. 17, 1969, Ser. No. 858,875
Int. Cl. C10m 1/40, 3/34
U.S. Cl. 252—33 50 Claims

Processes for preparing basic magnesium salts of oil soluble organic acids by contacting an inorganic acidic material with a mixture of the acids, or their alkali or alkaline earth metal salts, magnesium oxide, and water or alcohol-water promoter system. Carbon dioxide is an exemplary acidic material. Lower alkanols, particularly methanol, are useful co-promoters for use with the water. Mixtures of oil-soluble sulfonic acids and oil-soluble carboxylic acids, or their alkali or alkaline earth metal salts, are useful starting materials for preparing basic magnesium salts. With alcohol-water co-promoters, the inorganic acidic material is contacted with the reaction mixture in two stages, first in the presence of both promoters and then in the presence of water only. The products are useful as additives in lubricants and fuels and as intermediates in preparing other useful products.

3,629,110
SOLID DIELECTRIC POLYOLEFIN COMPOSITIONS CONTAINING VOLTAGE STABILIZERS
George H. Hunt, West Newton, Mass., assignor to Simplex Wire and Cable Company, Cambridge, Mass.
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,603
The portion of the term of the patent subsequent to May 19, 1986, has been disclaimed
Int. Cl. H01b 3/22
U.S. Cl. 252—63.2 13 Claims

A solid dielectric composition is disclosed comprising a major amount of solid-phase polyolefin, e.g., polyethylene, polypropylene or polyisobutylene having dispersed therein a small, soluble voltage stabilizing amount from about 0.1 to about 10 percent of a voltage stabilizing additive. The voltage stabilizing additives include phthalic anhydride; benzoguanamine; triphenyl formazan; quinoline; isoquinoline; indene; indol and quinaldine, and mixtures thereof with other known voltage stabilizing additives to polyethylene, e.g., chlorinated aromatic hydrocarbons and other substituted aromatic hydrocarbons characterized by having an electron donor group and an electron acceptor group potentially hydrogen bonded together by a reversible proton, and mixtures thereof with m-dinitrobenzene; m-nitroaniline; p-nitroaniline; m-nitrotoluene; p-nitrotoluene; o-nitrochlorobenzene or p-nitrochlorobenzene.

3,629,111
HYDRAULIC FLUIDS CONTAINING NOVEL INHIBITOR COMPOSITIONS
Henry R. Cramer, Naugatuck, Conn., assignor to Olin Corporation
No Drawing. Continuation-in-part of application Ser. No. 634,457, Apr. 28, 1967. This application Oct. 2, 1970, Ser. No. 77,753
Int. Cl. C09k 3/00; C23f 11/14
U.S. Cl. 252—75 21 Claims

This invention relates to improved hydraulic fluids containing a novel inhibitor composition comprising a hydrazine compound and an organic acid compound.

3,629,112
AQUEOUS LUBRICATING COMPOSITIONS CONTAINING SALTS OF STYRENE-MALEIC ANHYDRIDE COPOLYMERS AND AN INORGANIC BORON COMPOUND
Howard D. Gower, Munster, Ind., and Bob G. Gower, Park Forest, and David Young, Homewood, Ill., assignors to Atlantic Richfield Company
No Drawing. Continuation-in-part of application Ser. No. 712,965, Mar. 14, 1968. This application Nov. 25, 1968, Ser. No. 778,804
Int. Cl. C10m 3/22, 1/28
U.S. Cl. 252—34.7 5 Claims

Aqueous cooling compositions, suitable for use in metal working, are prepared which contain a minor amount of a water-soluble salt of a copolymer of styrene and maleic anhydride or a partial ester thereof, or a water-soluble partial ester of the copolymer, together with a

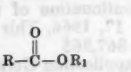
minor amount of boric acid or other boron compound which yields boric acid on hydration. Improvement in lubricating properties of the composition are realized by incorporating a minor amount of a water-soluble extreme pressure agent such as an organic phosphate ester or water-soluble or dispersible soaps of fats, fatty acids or derivatives thereof.

3,629,113
LUBRICATING COMPOSITION
Robert A. Gerlicher, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.
No Drawing. Filed Apr. 24, 1969, Ser. No. 819,120
Int. Cl. C10m *1/18, 1/22*
U.S. Cl. 252—49.7 **6 Claims**

A lubricant to prevent fouling of equipment contacted by polymerizable ethylenically unsaturated hydrocarbons and/or ethylenically unsaturated esters in which the lubricating composition contains a soluble N-nitroso aryl hydroxyl amine and preferably an oil soluble salt thereof.

3,629,114
FUNCTIONAL FLUID COMPOSITIONS
John D. Fairing, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of abandoned application Ser. No. 550,163, May 16, 1966. This application Feb. 27, 1969, Ser. No. 803,071
Int. Cl. C10m *1/48, 1/46, 1/36*
U.S. Cl. 252—49.8 **10 Claims**

Compositions which inhibit and control damage to mechanical members in contact with said compositions which comprise certain hydrocarbyl phosphate ester base stocks which contain a damage inhibiting amount of an ester of the structure



3,629,115
FLUOROSILICONE LUBRICANTS CONTAINING TRIS (PENTAFLUOROPHENYL) PHOSPHINE
Yung Ki Kim and Ogden R. Pierce, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 1, 1969, Ser. No. 846,934
Int. Cl. C10m *1/44, 1/50*
U.S. Cl. 252—49.9 **2 Claims**

Small amounts of tris(pentafluorophenyl)phosphine are added to fluoroalkylpolysiloxane lubricants as antioxidants and anti-wear additives.

3,629,116
STRUCTURED INSULATING MATERIALS
William J. Gartner, Schaumburg, and Charles T. Clark, Des Plaines, Ill., assignors to Desoto, Inc.
No Drawing. Filed May 1, 1969, Ser. No. 821,065
Int. Cl. C04b *43/04;* F16l *59/00*
U.S. Cl. 252—62 **11 Claims**

A structured insulating material of high infrared reflectivity, low thermal conductivity and good physical properties is prepared by vacuum forming an aqueous slurry comprising from about 10 to about 75 wt. percent of pigmentary potassium titanate, from about 1 to about 35 wt. percent of binder material of which from about 1 to about 25 wt. percent is colloidal silica, and from about 15 to about 89 wt. percent of inorganic fibrous material selected from the group consisting of ceramic fibers, mineral wool and mixtures thereof, all of said percentages being based on solids content.

The slurry deposit on the vacuum formed filter is removed from the filter and dried.

3,629,117
LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY
Zenjiro Okuno, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
No Drawing. Filed Oct. 14, 1966, Ser. No. 586,674
Claims priority, application Japan, Oct. 20, 1965, 40/63,940
Int. Cl. G03g *9/00*
U.S. Cl. 252—62.1 **2 Claims**

The invention relates to a developer for electrophotography of the type comprising a carrier liquid and pigment particles dispersed in said carrier, the invention residing in the chemical grafting of an organic material having unsaturated double bonds to the pigment to control the electrokinetic potential of the surface of the pigment.

3,629,118
FERRITE POWDER AND METHOD OF PREPARING IT
Morris D. Isserlis, Mountainside, N.J. (P.O. Box 1364, Edison, N.J. 08817)
Filed May 5, 1969, Ser. No. 821,892
Int. Cl. H01j *1/11, 1/113*
U.S. Cl. 252—62.54 **4 Claims**

A ferrite powder is prepared so that it comprises oriented agglomerates of ferrite particles or domains. The desired result is achieved by processing the materials used in making the powder in a magnetic field at a selected time in the manufacturing process.

3,629,119
WATER-IN-OIL EMULSIONS
John J. Weaver, Edwardsville, Ill., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,353
Int. Cl. B01f *17/16;* C09k *3/00*
U.S. Cl. 252—77 **5 Claims**

Dialkylaminoalkanols are effective as emulsion stabilizers in water-in-oil emulsions formed with a polyalkenyl succinic anhydride emulsifying agent.

3,629,120
FUNCTIONAL FLUID COMPOSITIONS
John D. Fairing, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 29, 1966, Ser. No. 583,115
Int. Cl. C10m *1/10;* C09k *3/02*
U.S. Cl. 252—78 **10 Claims**

Functional fluid compositions having the ability to inhibit and control damage to mechanical members in contact with such compositions are described. These compositions comprise certain functional fluid base stocks and an amount of an organosilicon compound sufficient to inhibit and control damage.

3,629,121
CARBOXYLATED STARCHES AS DETERGENT BUILDERS
Ibrahim A. Eldib, 22 Beekman Terrace, Summit, N.J. 07901
No Drawing. Continuation-in-part of application Ser. No. 698,107, Jan. 16, 1968. This application Dec. 15, 1969, Ser. No. 885,348
Int. Cl. C11d *1/04*
U.S. Cl. 252—89 **17 Claims**

Certain carboxy-containing derivatives of starches in salt form with an average of more than one carboxy group per repeating monomer unit, particularly those with more than one carboxyl group per repeating glucose

unit are extremely effective detergent builders in both solid and liquid laundry detergents. Detergents formulated with these builders exhibit excellent chelating ability for heavy metal ions, and excellent general detergency. These starch derivative builders, unlike the commonly used phosphates and nitrates, do not accelerate eutrophication, since they are not algae growth stimulants. Alkali metal salts of carboxymethyl cellulose are also useful is builders.

3,629,122
LOW-FOAMING RINSING AND WASHING AGENTS FOR DISH WASHERS
Günter Jakobi, Hilden, Rhineland, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany
No Drawing. Filed Feb. 17, 1969, Ser. No. 799,932
Claims priority, application Germany, May 4, 1968, P 17 67 384.6
Int. Cl. C11d *1/00*
U.S. Cl. 252—89 **8 Claims**

Low-foaming rinsing and washing compositions adapted for dish washers consisting essentially of (A) from 70% to 98% by weight of water-soluble polyvinyl alcohols having a molecular weight of between 1000 and 4000, and (B) from 2% to 30% by weight of foam-inhibiting compounds selected from the group consisting of aliphatic alcohols, aliphatic carboxylic acids and alkali metal salts thereof, aliphatic carboxylic acid amides and aliphatic amines, said compounds having at least one aliphatic or aliphatic-cycloaliphatic radical with from 8 to 22 carbon atoms, as well as aqueous solutions containing said low-foaming rinsing and washing compositions.

3,629,123
STABILIZED AMYLASE COMPOSITIONS
Anthony E. O'Reilly and Charles A. Hong, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Dec. 8, 1969, Ser. No. 883,356
Int. Cl. C11d *7/42*
U.S. Cl. 252—89 **15 Claims**

A stabilized amylase complex consisting essentially of amylase and hydrolysis products of chemically-modified cross-linked pregelatinized amylopectin is described, together with a process for preparing said complex which comprises mixing amylase and cross-linked pregelatinized amylopectin in an aqueous slurry having a temperature in the range of 35° F. to 110° F. and a pH of 4.5 to 8.5, the ratio by weight of amylase to cross-linked pregelatinized amylopectin being in the range of 1:1 to 1:200.

A laundry detergent composition is also described which consists essentially of from .001% to 3% by weight of a stabilized amylase complex mechanically mixed with a granular detergent composition which consists of a detergent and a builder.

Granular amylase containing detergent compositions are also described which contain a stabilized amylase complex attached to a water-soluble carrier granule.

3,629,124
BLEACHING, STERILIZING, DISINFECTING, AND DETERGING COMPOSITIONS
Thomas M. King, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Aug. 27, 1969, Ser. No. 853,512
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **20 Claims**

Compositions containing a chlorine-releasing agent such as sodium hypochlorite, an amino phosphonic acid (or water-soluble salt) such as amino tri(methylene phosphonic acid)—$N(CH_2PO_3H_2)_3$, and a stabilizing material for preventing chemical interaction between said agent and acid (or ionized form thereof) when both are in an aqueous solution, such as zinc sulfate. These compositions have a variety of utilities including scouring cleansers.

3,629,125
LIQUID DETERGENT COMPOSITIONS
Thomas Aquinas Payne, Jr., Teaneck, and Warren Eric Olson, Verona, N.J., assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation of application Ser. No. 685,273, Nov. 24, 1967, which is a continuation-in-part of abandoned application Ser. No. 362,489, Apr. 24, 1964. This application Oct. 15, 1969, Ser. No. 866,772
Int. Cl. C11d *3/04, 3/66*
U.S. Cl. 252—135 **14 Claims**

A phase-stable, pourable, heavy-duty, liquid detergent emulsion composition which does not exhibit a substantial change in viscosity on standing comprising a nonionic synthetic detergent, an alkali metal pyrophosphate, a combination of a first stabilizer which is a hydrolyzed linear copolymer of ethylene and maleic anhydride and a second stabilizer which is a hydrolyzed cross-linked copolymer of ethylene and maleic anhydride, and the balance substantially water.

3,629,126
LIQUID DETERGENT COMPOSITION
Walter Fries and Rolf Nagel Puchta, Horstmar, and Wolfgang Gundel, deceased, late of Dusseldorf-Oberkassel, Germany, by Maria-Luise Elsa Gundel, heir and legal representative, Dusseldorf-Oberkassel, Germany, assignors to Henkel & Cie. G.m.b.H., Dusseldorf-Holthausen, Germany
No Drawing. Continuation of application Ser. No. 535,660, Mar. 17, 1966. This application Oct. 20, 1969, Ser. No. 867,965
Claims priority, application Germany, Mar. 30, 1965, H 55,644
Int. Cl. C11d *3/08, 1/835, 1/86*
U.S. Cl. 252—526 **6 Claims**

Liquid detergent compositions comprising 40 to 70% water and 30 to 60% dissolved and suspended materials consisting essentially of the following in percent by weight based upon the total weight of the suspended and dissolved material: 1 to 5% of at least one salt of a cellulose ether carboxylic acid, 5 to 20% of at least one member selected from the group consisting of surface active amine oxides and surface active ether sulfates, 0 to 40% conventional detergent additives, 0 to 30% of wash active substances other than the amine oxides and/or ether sulfates and 0.5 to 25% of a mixture of 40 to 60% of at least one C_{16} to C_{24} fatty alcohol sulfate and 60 to 40% of at least one sulfobetaine.

3,629,127
LOW FOAMING RINSE ADDITIVE
Frank W. Palmer, Detroit, and Otto T. Aepli, Southgate, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Aug. 5, 1968, Ser. No. 749,937
Int. Cl. C11d *1/12*
U.S. Cl. 252—55 **6 Claims**

Low foaming rinse additives are prepared from a blend of nonionic and anionic surfactants which are water-soluble or miscible at temperatures above 180° F. The nonionic surfactants which are used in the practice of this invention are modified oxyalkylated linear alcohols and the anionic surfactants which are used in the practice of this invention are sulfosuccinic acid esters or phosphate esters.

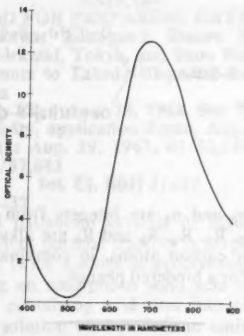
3,629,128
STABILIZATION OF CHLORINATED HYDROCARBONS
John Henry Rains, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 681,019, Nov. 6, 1967. This application June 26, 1968, Ser. No. 740,039
Int. Cl. C09d *9/00;* C11d *7/50;* C23g *5/02*
U.S. Cl. 252—171 20 Claims

Stabilized methyl chloroform and method for stabilizing methyl chloroform against the formation of acidic products therein by supplying thereto 1,4-dioxane, nitromethane, butylene oxide, N-methylpyrrole, and an amine selected from diisopropylamine, diallylamine, isobutylamine and n-butylamine.

3,629,129
CHEMILUMINESCENT SMOKES
Urho Albert Lehikoinen, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed June 29, 1967, Ser. No. 649,850
Int. Cl. C09k *3/00, 3/30*
U.S. Cl. 252—188.3 16 Claims

Chemiluminescent smoke, that is, a smoke visible both by day and night, is produced when a composition consisting essentially of (a) an aluminum alkyl, (b) an ether or an amine complexing agent, and (c) an alkyl or an aryl nitrile, is contacted with air and water.

3,629,130
POLYESTER FILTER CONTAINING COPPER II SALTS
Richard J. Hovey, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 15, 1969, Ser. No. 885,053
Int. Cl. F21v *9/04;* G02b *2/20*
U.S. Cl. 252—300 8 Claims



An optical filter for infrared and near infrared wavelengths, particularly useful for shielding against laser light, has a cast polyester matrix formed by polymerizing a monomer containing a dissolved copper (II) salt. The absorption spectra of the case polyester are independent of the particular copper (II) salt.

3,629,131
PROCESS FOR PRODUCING EUROPIUM-ACTIVATED YTTRIUM VANADATE PHOSPHORS
James E. Mathers, Ulster, and Felix F. Mikus and Emil J. Mehalchick, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Nov. 12, 1969, Ser. No. 876,051
Int. Cl. C09k *1/44*
U.S. Cl. 252—301.4 R 6 Claims

An improved process for manufacturing europium-activated yttrium vanadate phosphor containing a bismuth additive is disclosed that comprises forming a mixture of yttrium and europium sources that have low levels of certain rare earth impurities, a bismuth source at specific levels and ammonium metavanadate having a specific bulk density and a low level of metallic impurities and thereafter heating the mixture for at least two hours at specific temperatures to achieve a phosphor having an increased brightness and an acceptable color purity.

3,629,132
PROCESS FOR SEPARATING SPECIFIC RADIOELEMENTS, SINGLY OR MULTIPLY, FROM A MIXTURE OF RADIOACTIVE ELEMENTS
Constantine J. Maletskos, Gloucester, and Chung-Wai Tang, Cambridge, Mass., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Feb. 13, 1969, Ser. No. 799,118
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R 3 Claims

A process for selectively removing radioactive isotopes of Na, K, and/or Cl from acidic aqueous solutions wherein these solutions are admixed with organic solvents and passed over columns made up of inorganic salts having nonradioactive forms of the isotopes which are to be removed from the solution.

3,629,133
PRODUCTION OF PREDOMINANTLY CRYSTALLINE SOLS OR URANIA
John P. McBride, Oak Ridge, Kenneth H. McCorkle, Powell, and William L. Pattison, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 8, 1969, Ser. No. 814,311
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 S 1 Claim

The present invention relates to a method for forming a stable, predominantly crystalline sol from an acid-deficient solution of a hydrous metal oxide in which the metal is in the +4 oxidation state which comprises heating said solution to a crystallizing temperature to cause an increase in conductivity of said solution, removing anion at the crystallizing temperature to a condition of further acid deficiency at a rate which approximates the rate of release of free acid to the aqueous phase of the resultant sol, and then adjusting the anion-to-metal ratio of the sol to a desired anion-to-metal ratio.

3,629,134
METHOD OF MAINTAINING VARIABLE DENSITY DISSOLVER SOLUTIONS CRITICALLY SAFE
Donald W. Rhodes, Idaho Falls, Idaho, assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 7, 1969, Ser. No. 814,523
Int. Cl. G21c *7/08*
U.S. Cl. 252—301.1 R 2 Claims

A dissolver vessel can be made critically safe during the dissolution of nuclear fuel by adding insoluble particulate poisons to the dissolvent. The insoluble poison particles have a density range so that a sufficient amount of poison is always in suspension even though the dissolvent changes density during the dissolution process.

3,629,135
METHOD OF DISSOLVING RADIOACTIVE CONTAMINATED ORGANIC ION EXCHANGE RESINS
Malcolm W. Wilding, Idaho Falls, Idaho, assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Oct. 10, 1968, Ser. No. 766,653
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 4 Claims

A method of dissolving organic ion exchange resins without a residue by heating the resin in an aqueous solution of nitric acid and potassium permanganate.

3,629,136

CALCIUM YTTRIUM SILICATE OXYAPATITE LASER MATERIAL CONTAINING HOLMIUM AND CHROMIUM IONS

Nathan T. Melamed, Pittsburgh, and George W. Roland and Richard H. Hopkins, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1969, Ser. No. 859,754
Int. Cl. C09k 1/54; H01s 3/16
U.S. Cl. 252—301.4 F 3 Claims

A composition of matter which can be used as a laser crystal and which can be doped with Cr sensitizer ions has the empirical chemical formula $CaY_{4-x}(SiO_4)_3O:Ho_x$ where x has a value from .001 to 1.

3,629,137

GLASS FOR LASER

Isao Masuda, Tokyo, Japan, assignor to Hoya Glass Works, Limited, Tokyo, Japan

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,880
Claims priority, application Japan, Oct. 12, 1969, 43/74,339
Int. Cl. C09k 1/54; C03c 3/10, 3/28
U.S. Cl. 252—301.4 F 4 Claims

A SiO_2—R_2O—PbO glass containing Nd^{3+} ion as fluorescent element can be improved in its fluorescent properties by having V^{5+} ion present in said glass, whereby the resulting glass is markedly useful when used as the material for laser having a higher quantum efficiency.

3,629,138

METHOD FOR EXCHANGING COUNTERIONS IN ACTINIDE OXIDE SOLS

Iran L. Thomas, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,095
Int. Cl. C09k 3/00
U.S. Cl. 252—301.1 S 4 Claims

There is provided a method for exchanging counterions, such as nitrates and chlorites, in acidic metal oxide sols comprising contacting a nitrate-stabilized metal oxide sol with carbon dioxide, removing the released nitrate and contacting the carbon dioxide-stabilized colloidal system with a chloride-containing solution to form a chloride-stabilized metal oxide sol.

3,629,139

SILICA ORGANOSOLS AND PROCESS FOR MAKING

Peter H. Vossos, Berwyn, Ill., assignor to Nalco Chemical Company

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,107
Int. Cl. B01j 13/00
U.S. Cl. 252—309 10 Claims

Silica organosols comprising an organic solvent having uniformly dispersed therein from 0.1% to 50% by weight of discrete, dense colloidal particles of amorphous silica have adsorbed upon their surfaces a quaternary ammonium salt or hydroxide. A method of preparing these silica organosols is disclosed.

3,629,140

WATER SOLUBILIZATION OF VANADYL-HARDENED POLY(VINYL ALCOHOL) FILMS USEFUL AS CAPSULE WALL MATERIAL

Robert G. Bayless, Yellow Springs, Donald D. Emrick, Kettering, and Ronald L. Hart, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed July 14, 1969, Ser. No. 841,596
Int. Cl. B01j 13/02; B44d 1/02, 1/44
U.S. Cl. 252—316 15 Claims

A process is disclosed for manufacturing, en masse, minute capsules having walls which are cold water soluble. More specifically disclosed is a process for treating already-formed capsule walls comprising water-insolubilized vanadyl(IV)-hardened poly(vinyl alcohol), wherein the vanadyl ions are oxidized to a valence number such that the vanadium no longer serves to render the poly(vinyl alcohol) water insoluble. In one disclosed embodiment, dry walled capsules which had previously been vanadyl(IV)-hardened are treated by oxidizing the vanadium so that the thus-treated capsule walls are soluble, on later contact, with cold water. In other embodiments, oxidizing materials are used in combination with the water-insolubilized capsule wall material to render the vanadyl(IV)-hardened capsule wall material water soluble upon first contact of water with the combination of materials. The polymeric capsule wall material which is disclosed in the present invention is poly(vinyl alcohol) polymeric material which has been initially insolubilized by complexing with hydrous vanadyl(IV) compounds.

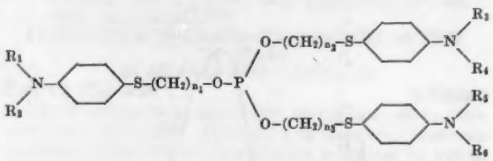
3,629,141

TRI(DIALKYLAMINOPHENYL THIOALKYLENE) PHOSPHITE STABILIZER COMBINATIONS

Hans Z. Lecher, Plainfield, N.J., and Harry Braus, Springdale, and Jay R. Woltermann, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Application Ser. No. 870,896, Oct. 16, 1969, which is a division of application Ser. No. 692,261, Dec. 21, 1967, now Patent No. 3,504,056. Divided and this application Oct. 16, 1969, Ser. No. 870,897
Int. Cl. C07c 7/18; C07f 9/08, 45/58
U.S. Cl. 252—400 5 Claims

Stabilizer combinations are provided consisting essentially of tri(dialkylaminophenyl thioalkylene) phosphites having the formula:



in which n_1, n_2 and n_3 are integers from two to about six; and R_1, R_2, R_3, R_4, R_5 and R_6 are alkyl having from one about four carbon atoms, in combination with carbon black and/or a hindered phenol.

3,629,142

REFERENCE STANDARD BLOOD SERUM FOR THE CALIBRATION OF AUTOMATIC BLOOD SERUM ANALYZING APPARATUS

Edward P. Marbach, 4607 Marwood Drive, Los Angeles, Calif. 90065

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,286
Int. Cl. G01n 31/22, 33/16
U.S. Cl. 252—408 5 Claims

A freeze-dried blood serum is provided for use as a reference standard in the calibration of automatic blood serum analyzing apparatus, comprising a human serum in which the levels of concentration of its constituents have been precisely adjusted, and which is specially processed for use in apparatus for the simultaneous analysis of the constituents of each of a succession of blood serum samples. The reference standard blood serum of the invention contains trihydroxymethylamine (Tris) carbonate so as to permit it to be reconstituted just prior to use with distilled water so as to restore a predetermined carbon

dioxide level in the reference serum. Alternately, the reference standard blood serum contains Tris, and is reconstituted with distilled water and carbon dioxide.

3,629,143
REGENERATOR FOR METAL HALIDE SLUDGE CATALYST
William S. Reveal, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,128
Int. Cl. B01j *11/02, 11/80*
U.S. Cl. 252—411 1 Claim

Metal halide catalyst sludges can be restored to activity after a period of use by being introduced into a regenerator consisting of an outer vessel, a concentric draft tube within the vessel, means for supplying hydrogen and means for supplying heat to the space between the vessel and the draft tube, means for removing hydrogen above a liquid level maintained in the vessel, and means for introducing sludge and removing reactivated catalyst from the vessel.

3,629,144
HEAVY METAL ACID SALT RECOVERY USING ANION EXCHANGE RESIN
George A. Hahn, New Shrewsbury, N.J., and John H. La Rochelle, La Port, Tex., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,709
Int. Cl. B01j *11/66*
U.S. Cl. 252—412 2 Claims

Heavy metal acid salt epoxidation/hydroxylation catalysts, are recovered in a form suitable for direct recycle by contact of an aqueous solution of said catalysts with a bicarbonate-treated strongly basic anion exchange resin.

3,629,145
METHOD FOR PREPARING CATALYSTS
Kiyoshi Morikawa, Kanagawa, Etsuro Echigoya and Takayasu Shirasaki, Tokyo, and Itsuo Furuoya, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Aug. 15, 1968, Ser. No. 752,783
Claims priority, application Japan, Aug. 16, 1967, 42/52,342; Aug. 19, 1967, 42/53,141; Sept. 8, 1967, 42/57,643
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 10 Claims

A supported palladium catalyst of high catalytic activity and excellent thermal stability is prepared by carrying out at least twice a series of process steps which consist of bringing an amorphous solid acid carrier (silica, alumina, etc.) containing acid sites into contact with a basic aqueous solution of a palladium amine or a palladium lower alkylamine complex—and, alternatively, also into contact with an aqueous solution of a water-soluble salt of a 3- or 4-valent metal (aluminum nitrate, titanium tetrachloride, etc.), and subjecting the thus-treated solid carrier to a thermal treatment (heating e.g. to 100 to 800° C.). If the starting solid carrier has no acid sites, as e.g. active carbon, acid sites are produced by treatment with oxyacid. The thus-obtained supported palladium catalyst is useful in inter alia the hydrogenation of a benzene nucleus.

3,629,146
CATALYST IMPREGNATION METHOD
Charles T. Adams, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Mar. 24, 1969, Ser. No. 810,029
Int. Cl. B01j *11/82*
U.S. Cl. 252—435 5 Claims

A method of preparing a supported hydrogenation metal catalyst containing high metal concentrations in a single impregnation using an aqueous impregnating solution containing high concentration of hydrogenation metal in solution and stabilized against precipitation by the presence of phosphoric acid and hydrogen peroxide in the solution.

3,629,147
OXIDATION CATALYST AND PROCESS
Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Application Feb. 16, 1966, Ser. No. 527,726, now Patent No. 3,530,176, which is a continuation-in-part of applications Ser. No. 483,802, Aug. 3, 1965, and Ser. No. 485,975, Aug. 13, 1965. This application Aug. 9, 1968, Ser. No. 847,747
The portion of the term of the patent subsequent to Jan. 11, 1983, has been disclaimed
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 4 Claims

Catalysts containing manganese molybdate, tellurium oxide and a manganese phosphate are useful in converting propylene or isobutylene in the presence of oxygen to mixtures of acrolein and acrylic acid or methacrolein and methacrylic acid.

3,629,148
IRON-MODIFIED BISMUTH PHOSPHOMOLYBDATE CATALYST
Jurgen G. Dominik, Freeport, Tex., and Robert D. Presson, Bedford Heights, and Carl G. Wysocki, Fairview Park, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,834
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 2 Claims

The instant product is a remanufactured catalyst. Used or spent bismuth phosphomolybdate catalyst is reformulated with the addition of iron by comminuting said catalyst with sufficient water to form a paste, adding aqueous ammonium heptamolybdate solution to said paste to form a slurry, adding said slurry to a silica dispersion in water acidified with phosphoric acid, adding an iron salt in acidic solution to said slurry and homogeneously dispersing it therein to form a smooth mixture, spray-drying said mixture and calcining the spray-dried product.

3,629,149
HYDROCARBON HYDROCONVERSION CATALYST
Bernard F. Mulaskey, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,233
Int. Cl. B01j *11/74, 11/40*
U.S. Cl. 252—439 5 Claims

A novel catalyst composition comprising a crystalline zeolitic aluminosilicate in association with from 2 to 15 weight percent nickel, or compounds thereof, and from 0.5 to 10 weight percent arsenic, or compounds thereof.

3,629,150
PROCESS FOR MAKING ISOBUTENE POLYMERIZATION CATALYST FROM SILICA, ALUMINUM ALKYL AND A HALIDE
Leslie Ernest Addy, Dollar, Scotland, assignor to BP Chemicals (U.K.) Limited, London, England
No Drawing. Filed June 2, 1969, Ser. No. 829,762
Claims priority, application Great Britain, May 31, 1968, 26,100/68
Int. Cl. B01j *11/78*
U.S. Cl. 252—442 15 Claims

Catalysts suitable for polymerizing isobutene are made by reacting, under substantially anhydrous conditions, dehydrated silica having silanol groups with aluminium alkyl, and then with a hydrogen halide or an alkylhalide.

3,629,151

OXYHALOGENATION CATALYSTS

Clarence O. Miller, Sulphur, La., and Charles G. McAlister, Linthicum Heights, Md., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed Oct. 18, 1968, Ser. No. 768,902

Int. Cl. B01j *11/82*

U.S. Cl. 252—443 12 Claims

Processes are described for preparing thermally stable oxyhalogenation catalyst compositions having a copper silicide or copper-silicon alloy superstrate and a silicon carbide substrate. The unique stability of these catalysts under high temperature oxyhalogenation conditions is illustrated by the prolonged use of such material to catalyze the reaction of ethylene, oxygen and hydrogen chloride to produce 1,2-dichloroethane.

3,629,152

PROCESS FOR PREPARING ALUMINA-COATED SILICA CATALYST MATERIAL AND THE MATERIAL SO PREPARED

John Francis Lindsley, Glenbrook, and William Eugene Sanborn, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 3, 1967, Ser. No. 672,442

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 R 10 Claims

A process for preparing alumina-coated silica catalyst materials is disclosed which comprises the homogenization of a mixture of silica gel containing aluminum salt in aqueous solution and subsequent precipitation of alumina on silica.

3,629,153

PROCESS FOR PREPARING ALKALIZED ALUMINA

James N. Pryor, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 640,796, May 24, 1967. This application Feb. 12, 1969, Ser. No. 798,797

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 17 Claims

A process is provided for preparing an alkalized alumina solid adsorbent by reacting sodium aluminate with either ammonium carbonate or carbon dioxide to produce dawsonite [$NaAl(CO_3)(OH)_2$ or $KAl(CO_3)(OH)_2$], and optionally heating the dawsonite to convert it to an alkalized alumina comprising substantially Al_2O_3 and an alkali metal.

3,629,154

THIN, ELECTRICALLY CONDUCTIVE, NONPOROUS POLYMERIC FILM

Martin H. Johnson, Verona, Wis., assignor to ESB Incorporated

No Drawing. Continuation-in-part of application Ser. No. 504,198, Oct. 23, 1965. This application Oct. 30, 1969, Ser. No. 872,761

Int. Cl. H01b *1/02, 1/04*

U.S. Cl. 252—511 5 Claims

A thin, electrically conductive, nonporous polymeric film containing from about 20 to about 40% by weight of an ethylene/vinyl acetate copolymer, up to about 10% by weight of polyisobutylene, and an electrically conductive ingredient. The film, which is unsupported, has a thickness of less than about 10 mils and is particularly adapted for use as an electrical connector in an electric battery. When used as an electrical connector in a battery, the film should have a transverse electrical resistivity of less than about 5 ohm-cm. and a longitudinal electrical resistivity of less than about 2 ohm-cm.

3,629,155

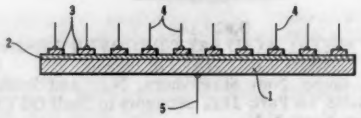
ELECTRONIC BISTABLE SEMICONDUCTOR SWITCHING ELEMENT AND METHOD OF MAKING SAME

Knud Kristensen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation-in-part of applications, Ser. No. 593,404, and Ser. No. 593,478, both Nov. 10, 1966. This application Aug. 26, 1969, Ser. No. 865,544

Int. Cl. H01b *1/02*; H01l *3/00*; C22c *31/00*

U.S. Cl. 252—512 5 Claims



It is found that as the semiconductor composition of an electronic bistable semiconductor switching element there may be employed sulfur or any other solid group VI element, preferably selenium, in admixture with antimony with less rigid control with respect to proportions than is conventional for stibnite switches provided that the composition is used in the form of a layer of a thickness no greater than 1 mm. It is found advantageous to provide the layer on an electrode which is of a highly thermally conductive material and has a cross-sectional area greater than the cross-sectional area of the layer in order to provide a heat sink to aid the dissipation of heat from the layer. A particular application of the invention is a thin-film store. A method is provided for making such a store by providing a film or layer of the semiconductor composition on a unitary electrode and heating the layer to crystallize it uniformly by the application of externally derived heat or by passing a current pulse through it, or by providing a plurality of individual electrodes on the exposed face of the layer and passing a current pulse through the layer between the unitary electrode and the individual electrodes to form crystalline channels in the composition along the paths of said pulses.

3,629,156

ELECTRICAL RESISTORS COMPRISING RHOMBOHEDRAL PLATINUM COBALT OXIDES

Robert D. Shannon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Aug. 16, 1968, Ser. No. 753,065, now Patent No. 3,514,414, which is a continuation-in-part of applications Ser. No. 561,336, and Ser. No. 612,775, both Jan. 31, 1967. Divided and this application Nov. 12, 1969, Ser. No. 876,031

Int. Cl. H01b *1/06*

U.S. Cl. 252—518 9 Claims

Electrical resistors can be made by applying to a ceramic dielectric substrate, and firing, a composition of a rhombohedral platinum cobalt oxide having the space group $R\bar{3}m$. Usually, the oxide has the formula $Pt_xCo_yO_2$, in which each of x and y is about 0.85 ± 0.15, but it also can contain about 0.1–2.0% by weight of manganese in its

crystal lattice. In the latter case, the oxide has the formula $Pt_xMn_zCo_yO_2$, in which x and y are as above, and z is a value from 0.004 to 0.11.

3,629,157
FERRITE AND METHOD OF MANUFACTURING THE SAME

Marina Anatolievna Kharinskaya, Ul. Bukharestskaya 31, korp. 4, kv. 85, and Alexei Ivanovich Obraztsov, prospekt Ju. Gagarina 85, kv. 35, both of Leningrad, U.S.S.R.

Filed July 23, 1969, Ser. No. 843,974
Int. Cl. C04b *35/00, 35/46*
U.S. Cl. 252—62.59 **2 Claims**

Ferrite prepared from a stock mixture constituted of iron, calcium, vanadium and titanium oxides taken in the following proportions (mole percent):

Ferric oxide, Fe_2O_3	31.0–26.3
Calcium oxide, CaO	54.0–50.8
Vanadium pentoxide, V_2O_5	13.1–9.3
Titanium dioxide, TiO_2	13.6–1.8

and a method for the manufacture of said ferrite.

The ferrite thus prepared may find application for developing and manufacturing super-high frequency ferrite devices operating in the decimetric wave band under low-temperature conditions (77° K.; 4.2° K.).

3,629,158
PROCESS FOR CONTROLLING ELECTRICAL RESISTIVITY OF ORGANIC SEMICONDUCTORS

Evelio A. Perez-Albuerne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,837
U.S. Cl. H01l *3/24*
U.S. Cl. 252—500 **15 Claims**

The electrical resistivity of certain organic semiconductors and semiconductor-containing elements is controlled by heating.

3,629,159
REGENERATION OF SPENT ZINC HALIDE CATALYST USING PRELIMINARY HIGH PRESSURE HYDROGEN SOLVENT EXTRACTION

Everett Gorin, Robert T. Struck, and Metro D. Kulik, Pittsburgh, Pa., assignors of a fractional part interest to Consolidation Coal Company, Library, Pa., and to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,914
Int. Cl. B01j *11/80;* **C10g** *1/06*
U.S. Cl. 252—414 **3 Claims**

Spent zinc halide hydrocracking catalyst is contacted with a nonpolar hydrocarbon solvent in the presence of high pressure hydrogen to extract unconverted hydrocarbonaceous residue from the spent catalyst.

3,629,160
NOVEL DIALKYL SULFOXIDE-ORGANO METALLIC CO-CATALYST SYSTEM AND THE POLYMERIZATION OF EPOXIDES THEREWITH

Leonard A. Tushaus, South Bloomington, Minn., assignor to Ashland Oil & Refining Company, Houston, Tex.

No Drawing. Filed Aug. 8, 1968, Ser. No. 751,050
Int. Cl. C08g *23/06, 23/14*
U.S. Cl. 260—2 **5 Claims**

Epoxides, especially higher olefin oxides (e.g., dodecene oxide), are polymerized by heating in the presence of a co-catalyst system comprising (a) an organo-metallic compound of the formula $MeRR_x'$, in which Me is a Group II or III metal, R is hydrocarbyl, R' is hydrogen, hydrocarbyl, alkoxy, or secondary amino, and x is the valency of Me minus one (e.g., triethylaluminum and diethyl zinc) and (b) a dialkyl sulfoxide (e.g., dimethylsulfoxide).

3,629,161
IONENE MEMBRANE SEPARATOR

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Jovan Moacanin and Ho Yet Tom, both of Los Angeles, Calif.

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,781
Int. Cl. C08f *29/30,* **C08g** *49/04*
U.S. Cl. 260—2.1 E **11 Claims**

A water-insoluble, cationic, permselective membrane comprising a hydrocarbon, quaternary nitrogen-containing ionene polymer cross-linked to a polyvinyl alcohol substrate.

3,629,162
POLYURETHANE FOAMS AND PREPARATION OF SAME

Thomas Richardson and Gerald Orton Hustad, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Feb. 3, 1970, Ser. No. 8,438
Int. Cl. C08g *22/44;* **C08h** *1/00*
U.S. Cl. 260—2.5 **16 Claims**

Polyurethane foams and method for their preparation wherein an organic polyisocyanate is reacted for foaming with a mixture of an organic polyol and whey.

3,629,163
EPOXIDE RESIN CELLULAR PLASTICS AND THEIR MANUFACTURE

Ernst Nolken, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 5, 1969, Ser. No. 822,043
Claims priority, application Germany, May 13, 1968, P 17 70 400.6
Int. Cl. C08g *53/10*
U.S. Cl. 260—2.5 EP **11 Claims**

A process for producing cellular plastic materials by curing epoxide compounds having more than one epoxide group in the molecule which comprises carrying out the curing and foaming in the presence of mixtures of phosphorous acid with Lewis acids and in the presence of volatile expanding agents and optionally in the presence of pore regulating substances, reactive diluents and comonomers or mixtures of the last-mentioned substances, diluents and comonomers. The cellular plastics obtained may have either closed cells or open cells or simultaneously closed and open cells, the proportion of which is adjustable.

3,629,164
FOAMED BLEND OF PROPANE-PRECIPITATED ASPHALT ETHYLENE-ACRYLATE/METHACRYLATE COPOLYMER AND POLYOL CROSS-LINKED IN-SITU

Wayne E. Smith, Overland Park, and Francis R. Galiano, Prairie Village, Kans., and Richard H. Havens, Kansas City, Mo., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 23, 1969, Ser. No. 827,147
Int. Cl. C08f *47/10, 45/52*
U.S. Cl. 260—2.5 R **5 Claims**

A tough, cohesive, non-tacky blend results when propane-precipitated asphalt is mixed with a copolymer of ethylene with a lower alkyl acrylate or methacrylate, such as methyl acrylate, and, optionally, a polyol, such as glycerine, which is cross-linked in situ to increase tensile strength. This blend is then foamed with conventional blowing agents.

3,629,165

CONTROL OF POLYURETHANE FOAM PROCESS USING POLYSILOXANE POLYETHER COPOLYMER SURFACTANT

Norman G. Holdstock, Scotia, N.Y., assignor to General Electric Company

No Drawing. Original application May 31, 1962, Ser. No. 198,710. Divided and this application Aug. 25, 1969, Ser. No. 870,259

Int. Cl. C08g *22/46, 53/08*

U.S. Cl. 260—2.5 AH 2 Claims

A polysiloxane polyether copolymer, wherein the polysiloxane chain is joined to the polyether chain through carboxy alkyl radicals, is used as a polyurethane foam additive. The carboxy alkyl groups are attached to the silicon atoms through Si—C bonds which enhances the hydrolytic stability of the copolymer. The copolymers are produced by reacting carboxy alkyl containing polysiloxanes with hydroxy stopped polyethers.

3,629,166

COATING COLOR, A COATED PAPER APPLIED WITH SAID COATING COLOR AND A PROCESS FOR PREPARING SAID COATED PAPER

Shonosuke Takahashi, Yonago-shi, and Mitsuo Tanaka, Sakai-shi, Japan, assignors to Nippon Pulp Industry Co., Ltd., Tokyo, Japan, and Arakawa, Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaki-shi, Japan

No Drawing. Filed Feb. 18, 1969, Ser. No. 800,293

Claims priority, application Japan, July 26, 1968, 43/52,424

Int. Cl. C08b *25/02;* D21h *1/24, 1/28*

U.S. Cl. 260—17.3 5 Claims

A water-insolubilized coated paper prepared by applying a coating color having pH over 8.0 to a paper, the coating color being prepared by subjecting an aqueous starch solution to cooking treatment together with amine modified urea formaldehyde resin in the presence of acid catalyst and mixing the water insolubilized starch solution thus obtained with pigment containing at least a part of alkaline pigment.

3,629,167

TWO-PACKAGE EPOXY-URETHANE COATING COMPOSITION

Roy A. Allen, Iselin, and George R. Somerville, Morristown, N.J., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,684

Int. Cl. C08g *45/12*

U.S. Cl. 260—18 10 Claims

A two-package epoxy-urethane coating system having improved low temperature curing properties comprises: (1) a precondensate prepared by reacting a polymeric fatty acid, an amine and a polyepoxide having more than one vic-epoxy group and (2) an organic polyisocyanate (or polyisothiocyanate).

3,629,168

DIAMINE-CURABLE POLYURETHANE COMPOSITIONS CONTAINING OLEIC ACID AS CATALYST

William M. Ryan, Arcadia, Calif., assignor to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,801

Int. Cl. C08g *22/34, 17/16, 22/16*

U.S. Cl. 260—18 TN 8 Claims

Diamine cured polyurethane compositions having unusually long pot life while rapidly curing at elevated temperatures and having remarkable storage stability at —40° F. are prepared by combining a prepolymer of a di or poly isocyanate and a hydroxy terminated polyether or polyester having a molecular weight in the 150 to 3,000 range, said prepolymer containing about 2.5 to 10% by weight —NCO, with a lower alkylene bis anthranilic acid ester or a suspension of a lower alkylene bis anthranilic acid ester in an anhydrous diluent selected from the group consisting of plasticizers and co-curing glycols, the proportions of said prepolymer and hardener being such as to provide an NH_2:NCO ratio of about 0.9:1 to 1.0:1, and oleic acid as a polyurethane catalyst. The prepolymer and hardener, if degassed to remove air and moisture, provide stable two-component resin systems having excellent shelf life. One component systems with exceptional storage stability are prepared by mixing the prepolymer and hardener, freezing the mixture at —40° F. and storing the resulting composition at —40° F.

3,629,169

WATER-MODIFIED POLYESTER COMPOSITIONS

Leon B. Bedighian, Los Angeles, Calif., assignor to Vistron Corporation, Cleveland, Ohio

No Drawing. Filed June 18, 1969, Ser. No. 834,497

Int. Cl. C08f *21/02, 21/04*

U.S. Cl. 260—22 CB 9 Claims

Curable water-oil emulsions comprising a mixture of an unsaturated polyester, copolymerizable monomer, nonionic emulsifier, water, a thixotropic thickener, a basic neutralizing agent and a polymerization initiator.

3,629,170

THERMOPLASTIC RESIN COMPOSITION AND A METHOD FOR THE PRODUCTION THEREOF

Saburo Yamanouchi, Kobe, Kiyoshi Yasuno, Ibaragi-shi, and Shuji Kitamura, Toyonaka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed May 5, 1969, Ser. No. 821,942

Claims priority, application Japan, Nov. 30, 1968, 43/87,956

Int. Cl. C08f *29/22*

U.S. Cl. 260—23 XA 10 Claims

The thermoplastic resin composition of the present invention is a mixture of 99 to 10 parts by weight of a polyvinyl chloride resin and 1 to 90 parts by weight of an aromatic polysulfonic resin having superior heat resistance together with an improved impact strength, and is suitable for use as articles for chemical industries, construction materials, etc.

This thermoplastic resin composition is most advantageously produced by mixing polyvinyl chloride and aromatic polysulfone containing a stabilizing agent for polyvinyl chloride, such as dibutyl tin dilaurate, dibutyl tin maleate, tin mercaptide, lead oxide, tribasic lead sulfate, dibasic lead phosphite, dibasic lead stearate, cadmium stearate, barium stearate, alkaline earth silicates, hydroquinone or epoxide and a stabilizing agent for aromatic polysulfone, such as naphthalene thiol, benzimidazole, organic sulfides, imides, phosphates or organo tin compounds, adding a low molecular weight compound such as an aromatic hydrocarbon, a chlorinated hydrocarbon, a ketone, an ester or an ether to the mixture and thereafter removing the low molecular weight compound.

3,629,171

WAX COMPOSITIONS CONTAINING AN ETHYLENE-VINYL ACETATE COPOLYMER, AND ORGANIC ACID AND A BUTYL RUBBER

Charles J. Kremer, Brookhaven, Pa., and Dominic Apikos, Laurel Springs, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed May 9, 1969, Ser. No. 823,522

Int. Cl. C08d *9/08;* C08f *15/00*

U.S. Cl. 260—23.7 B 13 Claims

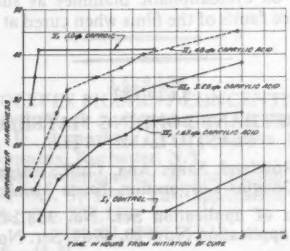
This invention relates to wax compositions containing a wax, an ethylene-vinyl acetate copolymer, an acid component and a solid butyl rubber. These compositions

have highly improved resistance to stress cracking and can be utilized as hot melt coatings for items such as paperboard and corrugated board for use in the food packaging industry.

3,629,172
ELASTOMERS FROM HIGH-VINYL CONJUGATED DIENE POLYMERS
Faber B. Jones, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed May 12, 1969, Ser. No. 823,973
Int. Cl. C08g *22/06*
U.S. Cl. 260—23.7 **13 Claims**

Hydrogenation of high-vinyl telechelic polymers substantially reduces the number of olefinic double bonds and yet maintains a substantially liquid material. Terminating with isocyanate end groups and curing or coupling with polyfunctional agents results in novel products having high resistance to oxidation, weathering, and cracking.

3,629,173
ACCELERATED CURING SYSTEM FOR DEPOLYMERIZED RUBBER
Albert R. Miller, Somerdale, N.J., Douglass E. Brooks, Ambler, Pa., assignors to E. F. Houghton & Co., Philadelphia, Pa.
Filed Mar. 5, 1969, Ser. No. 804,492
Int. Cl. C08d *9/14*; C08f *21/04*; C08h *9/00*
U.S. Cl. 260—23.7 **8 Claims**



The curing of depolymerized polyisoprene rubber can be accelerated by the addition of a saturated C_4–C_{12} monobasic aliphatic acid, or the amine or ammonium salts of such acids, to the p-quinonedioxime-lead dioxide curing system for depolymerized rubber.

3,629,174
HEAT-STABILIZED AND LIGHTFAST POLYAMIDES
Francesco Siclari, Cesano Maderno, Pierluigi Perazzoni, Palazzolo Milanese, and Pier Giorgio Silvestroni, Cesano Maderno, Italy, assignors to Snia Viscosa Società Nationale Industria Applicazioni S.p.A., Milan, Italy
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,245
Claims priority, application Italy, Mar. 6, 1969, 13,744/69
Int. Cl. C08g *51/26, 51/58, 51/62*
U.S. Cl. 260—29.1 R **8 Claims**

In the manufacture of polyamides for industrial uses in general, such as for the production of fibers, yarns, moulded articles and the like, the improvement is herein disclosed, which consists in the concurrent addition of a stabilizing copper compound and of an allyl halide, in which the hydrogen atom of the double-bonded methylene grouping is possibly substituted by an aliphatic radical. Allyl chloride has proven to be the most advantageous in its class. Very surprisingly, the presence of an allyl chloride as defined above has exhibited an unpredictable activity in neutralizing the discolouration which would be otherwise experienced should the copper compound be used alone. Products having an outstandingly high whiteness rating have been thus obtained.

3,629,175
METHOD OF PREPARING DISPERSIONS OF CARBOXYL-CONTAINING POLYMERS
Carl Moore, Midland, Mich., and James B. Louch, North Hampton, Va., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 12, 1969, Ser. No. 832,869
Int. Cl. C08d *41/00*
U.S. Cl. 260—29.6 E **12 Claims**

Dispersions of carboxyl-containing polymers such as 1,2-polybutadiene having terminal carboxyl groups are prepared by dispersing the polymer in an at least partially water-miscible alcohol, such as ethanol, which is characterized by being incapable of solubilizing the polymer, and contacting the carboxyl-containing polymer with an alkaline compound in water such as sodium hydroxide to neutralize at least some of the carboxyl groups of the polymer and thereby form the dispersion. All or a part of the alcohol can be separated from the dispersion if desired such as by distillation under vacuum. The dispersions can be used to provide protective coatings on metal or non-metal substrates.

3,629,176
NON-RESINOUS COMPOSITIONS CONTAINING A UREA-FORMALDEHYDE REACTION PRODUCT AND MELAMINE
Donald S. Shriver, Hopewell, Va., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 101,071, Apr. 6, 1961. This application Aug. 10, 1964, Ser. No. 388,692
Int. Cl. C08g *9/24, 37/30*
U.S. Cl. 260—29.4 **3 Claims**

A stable slurry comprising a substantially unreacted mixture of (1) a preformed non-resinous urea-formaldehyde reaction product reacted to the polymethyl urea stage, having a mol ratio of from 4.0 to 7.3 mols of formaldehyde per mol of urea and a pH of at least 7.0 is mixed with melamine or urea and melamine in an amount sufficient to reduce the formaldehyde to NH_2 group ratio to 0.7 to 1.0 mol of formaldehyde for every mol of NH_2 group present. The amount of melamine present in the mixture is at least 0.5% by weight of the total urea plus formaldehyde present.

3,629,177
PROCESS FOR PREPARING AN AQUEOUS SOLUTION OF A POLYVINYL ALCOHOL-FORMALDEHYDE-UREA POLYMER FOR USE IN WOOD FINISHING COMPOSITIONS
Gilbert F. Hoffmann, Mukwonago, Wis., assignor to O'Neil Duro Company, Milwaukee, Wis.
No Drawing. Continuation-in-part of application Ser. No. 792,856, Jan. 21, 1969, which is a continuation-in-part of application Ser. No. 759,508, Sept. 12, 1968. This application Feb. 28, 1969, Ser. No. 803,440
Int. Cl. C08g *13/00*; C09d *3/52*
U.S. Cl. 260—29.4 UA **14 Claims**

A water soluble surface finishing composition that produces a clear, plastic finish having high abrasion resistance, comprising an aqueous solution containing a stablized water soluble urea-formaldehyde vinyl alcohol polymer, a water soluble surface tension reducing agent, and a silicone oil, the composition having a pH above 7; and a wood product coated with said finishing composition.

3,629,178

PROCESS FOR INCREASING THE WET STRENGTH OF CELLULOSIC MATERIALS

Donald E. Jefferson, Sykesville, and Nelson S. Marans, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,366

Int. Cl. C08g *9/28, 37/30*

U.S. Cl. 260—29.4 R 1 Claim

This invention is directed to a resin solution useful for increasing the wet strength of cellulosic material, said solution being prepared by: (a) admixing over a period of about 0.1–15 minutes dicyandiamide, nitrilotriacetonitrile, and an alkali metal hydroxide in an inert liquid medium; (b) maintaining the resulting mixture at about 50–100° C. for about 10–600 minutes to form a solid condensation product; (c) separating the solid condensation product and reacting it with formaldehyde in a mixture of water and a monohydric alcohol having 1–4 carbon atoms to form the resin solution; and (d) recovering the resin solution.

This invention is also directed to the preparation and use of said resin solution and to a composition of matter comprising cellulosic material which has been treated with resin.

3,629,179

VINYL ESTER POLYMER EMULSIONS FREE OF CARBOXYL GROUPS STABILIZED WITH A ZINC COMPOUND

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 552,696, May 25, 1966. This application May 22, 1969, Ser. No. 827,041

Int. Cl. C08f *45/54*

U.S. Cl. 260—29.6 9 Claims

Aqueous emulsions of vinyl ester polymers which are free of carboxyl (COOH) groups, including the homopolymers of vinyl esters of 2 to 8 carbon monobasic alkanoic acids, and various copolymers thereof, which emulsions have a pH of 5 to 7 and contain from 0.05 to 1% by weight of zinc oxide, zinc hydroxide, zinc carbonate or a zinc salt of a 2 to 18 carbon aliphatic carboxylic acid having an ionization constant in water not higher than that of acetic acid. The zinc compound buffers the emulsion and stabilizes it against any substantial increase in viscosity during storage. The preferred emulsions are emulsions of polyvinyl acetate having a pH of 6 to 7 and containing 0.2 to 0.5% by weight zinc oxide.

3,629,180

PROCESS FOR THE PRODUCTION OF A THERMALLY STABLE POLYMER

Naoya Yoda, Masaru Kurihara, Noriaki Dogoshi, and Ryoji Nakanishi, Kamakura-shi, Kanagawa-ken, and Hirosuke Yumoto, Masaaki Itoga, Hiroshi Mochizuki, Toshiya Yoshii, and Saburo Fujita, Ohtsu-shi, Shiga-ken, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 23, 1969, Ser. No. 793,458

Claims priority, application Japan, Jan. 23, 1968, 43/3,492; May 27, 1968, 43/35,614; May 28, 1968, 43/35,696

Int. Cl. C08g *51/50*

U.S. Cl. 260—30.6 4 Claims

A process for producing shapable polymeric compositions having improved mechanical properties is described which involves the heating of a polymer containing polyamide-acid recurring units in an organic polymerization solvent, which solvent also contains an amount of a phosphorous compound in the range of from about .01% by weight to about 30% by weight until imide ring closure is effected.

3,629,181

NEW ADDUCT CURING AGENTS FROM POLYEPOXIDES AND CYCLOALIPHATIC DIAMINES

Alfred Heer, Basel, Wolfgang Schneider, Allschwil, and Bernd Dreher, Aesch, Basel-Land, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed July 28, 1969, Ser. No. 845,547

Claims priority, application Switzerland, Aug. 2, 1968, 11,639/68

Int. Cl. C08g *17/13, 51/40*

U.S. Cl. 260—31.8 E 12 Claims

New adduct curing agents from a polyphenol-polyglycidyl ether (special liquid diomethane-diglycidyl ethers, such as Epi Z) and a cycloaliphatic di-primary diamine ("isophoronediamine", 4,4′ - methylene-bis-(2-methyl-cyclohexylamine)) with an excess of 1.5 to 2.7 mols of diamine being used per 1 epoxide equivalent of the polyglycidyl ether. By addition of diluents of low volatility (dibutyl phthalate, polypropylene glycol or trimethylhexamethylenediamine) liquid curing agent formulations are obtained for "solvent-free" lacquers based on liquid epoxide resins. As a rule phenols (diomethane, "tris-Mannich") are further added as accelerators to the curing agent formulations. The lacquers formulated with the new adduct curing agents, in contrast to known lacquers based on cycloaliphatic diamines as such, do not tend to surface faults of the films when cured at room temperature.

3,629,182

POLYURETHANE BONDING MATERIAL FOR PLASTIC LAMINATES

Luther M. Roseland, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation of application Ser. No. 358,241, Apr. 8, 1964. This application Nov. 20, 1969, Ser. No. 871,705

Int. Cl. B44f *1/00;* C08c *11/32, 45/34*

U.S. Cl. 260—33.4 6 Claims

Adhesive formulation particularly adapted as a binding agent to bond together plastic films selected from the group consisting of polystyrene and polycarbonate, consisting essentially of a liquid urethane polymer, about 5 to about 30 parts by weight of a polypropylene glycol per 100 parts of the urethane polymer and from about 0.5 to about 60 parts by weight of a polyamine or polyol curing agent for the urethane polymer.

3,629,183

COMPOSITIONS OF VINYL CONTAINING DIORGANOPOLYSILOXANE GUMS AND BORON CONTAINING ORGANO-POLYSILOXANES

Jacques Proriol and Daniel Semanaz, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 2, 1969, Ser. No. 821,451

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 13 Claims

This invention discloses organopolysiloxane compositions which vulcanize to form adhesive elastomers on heating comprising a diorganopolysiloxane gum containing vinyl groups, an elastic boron-containing organopolysiloxane gum, a porogenic agent, a filler, an organic peroxide, and optionally a plasticiser.

3,629,184

WHISKER REINFORCED BINDERS FOR LAMINATED COMPOSITES AND ADHESIVES

Antoine Kawam, Washington, D.C., and Michael V. Ernest, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Sept. 23, 1968, Ser. No. 761,579
Int. Cl. C08g *51/04*
U.S. Cl. 260—38 7 Claims

A method of preparing laminates, adhesives, and molding materials in which B-staging of resin is carried out before combination with the reinforcing fabric.

3,629,185

METALLIZATION OF INSULATING SUBSTRATES

Frederick W. Schneble, Jr., and Edward John Leech, Oyster Bay, and John Francis McCormack, Roslyn Heights, N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Original application Jan. 3, 1967, Ser. No. 606,918. Divided and this application Oct. 17, 1969, Ser. No. 871,009
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 13 Claims

There are provided molding compositions comprising particles of resin having incorporated therewith fillers catalytic to the deposition of electroless metals. The catalytic fillers are made by replacing the cations in particulate base exchangeable materials with a cation of a metal selected from Groups 1 B and 8 of the Periodic Table of Elements. Articles molded from the compositions and the walls of holes drilled in them are metallized on being immersed in electroless metal deposition baths.

3,629,186

POLYOLEFIN PIGMENT CONCENTRATES

David C. Hull, Hugh J. Hagemeyer, Jr., and Raymond L. Etter, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 314,874, Oct. 9, 1963. This application May 19, 1969, Ser. No. 827,120
Int. Cl. C08f *29/12*
U.S. Cl. 260—41 R 4 Claims

A concentrate for dispersing particulate materials, such as pigment, in polymeric masses includes low molecular weight crystalline polypropylene having an inherent viscosity within the range of 0.2 to 1.1 and amorphous polypropylene having a viscosity at 150° F. of from 5,000 to 300,000 cps.

3,629,187

DENTAL COMPOSITIONS CONTAINING ADDUCT OF 2,2' - PROPANE BIS 3-(4-PHENOXY)-1,2-HYDROXY PROPANE - 1 - METHACRYLATE AND ISOCYANATE

Duncan E. Waller, Milford, Del., assignor to Dentsply International Inc., York, Pa.

No Drawing. Filed June 25, 1969, Ser. No. 836,650
Int. Cl. A61k *5/02;* C08f *45/10*
U.S. Cl. 260—41 R 29 Claims

Dental compositions are provided, including dental cements, dental cavity liners and composite restorative materials, wherein an adduct of 2,2-propane bis[3-(4-phenoxy)-1,2-hydroxy propane-1-methacrylate] and an isocyanate or diisocyanate is present in the liquid and or solid phase constituting such dental product.

Such adducts provide low polymerization shrinkage, good copolymerization and cross-linking capabilities, freedom from irritation in the oral environment and exceptional strength characteristics.

3,629,188

POLY (ω-AMINO CARBOXYLIC ACID) COMPOSITIONS STABILIZED WITH A COPPER SALT AND IODOFORM

Alex Krieger, Emmenbrucke, Switzerland, assignor to Societe de la Viscose Suisse, Emmenbrucke, Switzerland

No Drawing. Filed July 1, 1965, Ser. No. 468,920
Claims priority, application Switzerland, July 15, 1964, 9,270/64
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.75 4 Claims

Polyamide compositions suitable for textile filament, fibers and yarns are stabilized against degradation by incorporating copper and iodine-containing compounds.

3,629,189

ENHANCEMENT OF RESISTANCE OF OLEFIN POLYMERS TO COPPER-CATALYZED OXIDATIVE DEGRADATION

Motonobu Minagawa, Koshigaya, and Kenichi Nakagawa, Tokyo, Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed May 27, 1969, Ser. No. 828,365
Claims priority, application Japan, May 30, 1968, 43/36,929
Int. Cl. C08f *45/60*
U.S. Cl. 260—23 14 Claims

Heterocyclic hydrazines and lactams are provided which are useful in the enhancement of the resistance of olefin polymers to copper-catalyzed oxidative deterioration.

In addition, there are also provided stabilizer compositions consisting essentially of at least one olefin polymer stabilizer and heterocyclic hydrazines or lactams; olefin polymer compositions, such as propylene polymer compositions, containing heterocyclic hydrazines or lactams; and a process for enhancing the resistance of olefin polymers to copper-catalyzed degradation by incorporation of such compounds or of such stabilizer compositions.

3,629,190

BENZODIAZOBOROLES AS STABILIZERS FOR HYDROCARBON POLYMERS

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 623,805, Mar. 17, 1967. This application July 22, 1969, Ser. No. 843,852
Int. Cl. C08c *11/66;* C08d *11/64;* C08f *45/60*
U.S. Cl. 260—45.8 8 Claims

Stabilizing organic substrates against deterioration during transportation, storage and/or use by incorporating therein a 2-hydrocarbyl-1,3-di-secalkyl or di-cycloalkyl-2H-1,3,2-benzodiazoborole.

3,629,191

UV-ABSORBING HYDROXYPHENYL-BENZOTRIAZOLES

Hansjorg Heller, Riehen, Jean Rody, Basel, and Ernst Keller, Binningen, Basel-Land, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 544,834, Apr. 25, 1966, which is a continuation-in-part of applications Ser. No. 202,664, Ser. No. 202,665, Ser. No. 202,666, Ser. No. 202,667, and Ser. No. 202,668, all June 15, 1962, Ser. No. 328,480, Dec. 6, 1963, and Ser. No. 535,740, Mar. 21, 1966. This application Dec. 11 1969, Ser. No. 884,363
Claims priority, application Switzerland, June 16, 1961, 7,099/61
Int. Cl. C08f *45/60;* C08g *51/60*
U.S. Cl. 260—45.8 12 Claims

Light-stabilizers for polymeric light-sensitive products and materials are provided which pertain to the class of

2-(2'-hydroxyphenyl)-benzotriazoles. Compositions of the compounds and the light-sensitive materials are also provided.

3,629,192
POLYMERS STABILIZED WITH SUBSTITUTED HYDROXYPHENYL BENZOTRIAZOLES

Hansjorg Heller, Riehen, Jean Rody, Basel, and Ernst Keller, Binningen, Basel-Land, Switzerland, assignors to J. R. Geigy AG, Basel, Switzerland

No Drawing. Division of application Ser. No. 544,834, Apr. 25, 1966, which is a continuation-in-part of applications Ser. Nos. 202,664 through 202,668, all June 15, 1962, Ser. No. 328,480, Dec. 6, 1963, and Ser. No. 535,740, Mar. 21, 1966. Divided and this application Dec. 11, 1969, Ser. No. 884,304
Claims priority, application Switzerland, June 16, 1961, 7,097/61
Int. Cl. C08b *27/68;* **C08f** *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.8 **14 Claims**

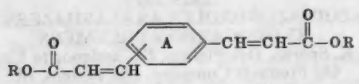
Light-stabilizers for polymeric light-sensitive products and materials are provided which pertain to the class of 2-(2'-hydroxyphenyl)-benzotriazoles. Compositions of the compounds and the light-sensitive materials are also provided.

3,629,193
ULTRAVIOLET-ABSORPTION AGENTS FOR POLYCARBONATES

Wolfgang Metzner, Krefeld, and Gunter Peilstocker, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,313
Claims priority, application Germany, Feb. 25, 1969, P 19 09 380.4
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.85 **2 Claims**

Polycarbonate materials are protected against the effect of ultraviolet rays by incorporation of materials of the formula



in which

R stands for an optionally substituted alkyl, cycloalkyl, aralkyl or aryl radical, and the ring A may contain further substituents.

3,629,194
POLYOLEFINS STABILIZED WITH MERCAPTO ACID ESTERS

Akiyoshi Onishi, Yokkaichi, and Naohiko Fukuoka, Kobe, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, and Shipro Kasei Kaisha Limited, Osaka-shi, Osaka-fu, Japan

No Drawing. Filed June 8, 1970, Ser. No. 44,656
Claims priority, application Japan, June 11, 1969, 44/45,912; Nov. 15, 1969, 44/91,184; Dec. 27, 1969, 45/104,890, 45/104,891, 45/104,892; Mar. 31, 1970, 45/27,132, 45/27,133
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 **7 Claims**

Polyolefin resin compositions each stabilized against thermal aging, which compositions each contains a stabilizing amount of an ester of alkylthio-propionic or alkylthio-butyric acid with a polyol, the polyol being limited to five groups, singly or in combination with a phenolic antioxidant.

3,629,195
ANACARDIC ACID REACTED WITH TRIS (HYDROXYETHYL) ISOCYANURATE

Manuel A. Jordan, Schenectady, and Kenneth C. Petersen, Scotia, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,842
Int. Cl. C08g *5/12*
U.S. Cl. 260—46 **14 Claims**

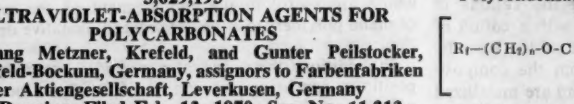
Anacardic acid, preferably in the form of cashew nut shell liquid, is reacted with tris (hydroxyethyl) isocyanurate. The product is useful as a brake lining binder or can be reacted with an aldehyde to form friction modifier particles.

3,629,196
FLUORINE AND SILICON CONTAINING POLYCONDENSATES

Helmut Hahn, Burghausen (Salzach), Siegfried Rebsdat, Altotting, Kasimir Ruchlak, Burgkirchen (Alz), and Erich Schuierer, Burghausen (Salzach), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,087
Claims priority, application Germany, Aug. 30, 1968, P 17 95 262.4
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E **4 Claims**

Polycondensates of the formula



in which R_f is perfluoroalkyl of 6 to 12 carbon atoms, R is a group of the formula —O— or lower alkyl, *n* is an integer of 1 to 4 and Z is a number of from about 10 to about 100, are useful as oleo- and hydrophobic agents for textile materials, especially for wool and cotton.

3,629,197
MONOMERS AND POLYMERS OF ACRYLOYLOXY-PHENOL AND DERIVATIVES THEREOF

Roy Thomas Stiehl, Jr., Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 642,735, June 1, 1967. This application Apr. 1, 1969, Ser. No. 812,392
Int. Cl. C08f *19/00;* **C07c** *69/52*
U.S. Cl. 260—47 U **7 Claims**

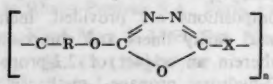
Acryloyloxyphenol and derivatives thereof containing chloro or hydrocarbyl substituents, and homopolymers and copolymers thereof with other unsaturated monomers, are provided which are useful as antioxidants in shaped or extruded articles, especially textiles.

3,629,198
POLYOXADIAZOLES

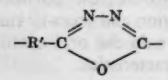
Henry W. Steinmann, Sparta, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,214
Int. Cl. C08g *33/04*
U.S. Cl. 260—47 CP **14 Claims**

Polymers represented by the formula:



wherein R is alkylene or arylene, *n* is an integer, X is an oxadiazolyl radical attached through a ring carbon, or a covalent bond or a radical of the formula:



wherein R' is alkylene or arylene. Polymers of this class are characterized by good high temperature properties and they are thus of particular utility in polymer applications where heat stability is required. The invention provides new precursors which can be converted to the aforedescribed polymers.

3,629,199
BENZALDEHYDE CROSSLINKED ALKYL ARYL PHOSPHITE

Kenneth C. Petersen and Charles A. Blowers, Scotia, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

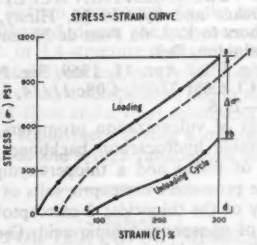
No Drawing. Filed July 14, 1969, Ser. No. 841,595
Int. Cl. C08g *1/12, 5/00, 13/00*
U.S. Cl. 260—53 R **6 Claims**

Resinous products are prepared by reacting benzaldehyde with a triaryl phosphite or a mixture of a triaryl phosphite with mono or diaryl phosphites and free phenol. The products are useful as antioxidants for polymers.

3,629,200
REACTION PRODUCTS OF OLEFINICALLY UNSATURATED DIISOCYANATES (II)

Thomas K. Brotherton and John W. Lynn, Charleston, W. Va., assignors to Union Carbide Corporation

Continuation of application Ser. No. 718,031, Apr. 2, 1968, which is a division of application Ser. No. 409,921, Nov. 9, 1964, now Patent No. 3,247,346, which in turn is a continuation-in-part of application Ser. No. 212,480, July 25, 1962. This application Aug. 7, 1969, Ser. No. 849,596
Int. Cl. C08g *22/18*
U.S. Cl. 260—75 **8 Claims**



Process which involves reacting unsaturated diester diisocyanates as exemplified by bis(2-isocyanatoethyl) fumarate with active hydrogen compounds, e.g., polyols, polyamines, etc. The resulting products are useful in the preparation of "blocked" diisocyanates, prepolymers, cast and thermoplastic polyurethane resins, urethane foams, reinforced plastic products, elastic fibers, and others.

3,629,201
POLYESTERIMIDES FROM DICYANO DIAMIDE-HYDRAZINE REACTION PRODUCTS

Arnold Dobbelstein and Hans-Dieter Hille, Wuppertal-Elberfeld, and Horst Holfort, Wuppertal-Langerfeld, Germany, assignors to Dr. Kurt Herberts & Co. vorm Otto Lous Herberts, Christbusch, Wuppertal-Barman, Germany

No Drawing. Filed Sept. 3, 1969, Ser. No. 855,039
Claims priority, application Germany, July 23, 1969, P 19 37 311.6
Int. Cl. C08g *20/32*
U.S. Cl. 260—75 N **8 Claims**

A process for the production of polyester resins containing 5-membered imide rings formed when heated to temperatures above 250° C. from polyhydric alcohols, polyvalent aromatic carboxylic acids and polyvalent amino compounds, optionally in admixture with other aliphatic and/or aromatic polyvalent carboxylic acids, or from reactive derivatives of these compounds. A portion of the polyvalent amino compounds is the reaction product of dicyano diamide with hydrazine.

3,629,202
TREATING POLYESTERS WITH ORGANIC ACIDS FOR IMPROVED STABILITY

Russell Gilkey and Thomas Hamilton Wicker, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 12, 1969, Ser. No. 857,589
Int. Cl. C08g *17/003*
U.S. Cl. 260—75 T **14 Claims**

Polyesters of improved thermal and hydrolytic stability obtained by treating the polymers containing residues of metal condensation catalysts employed in their preparation with an acidic organic compound having an ionization constant of about 2×10^{-1} to 2.5×10^{-6} to remove the residues.

3,629,203
PROCESS FOR THE MANUFACTURE OF POLY-β-ALANINE COMPRISING REACTING ACRYLONITRILE WITH FORMIC ACID

Theodor Volker and Hanspeter Hugener, Fribourg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Filed Feb. 18, 1970, Ser. No. 12,463
Claims priority, application Switzerland, Feb. 19, 1969, 2,491/69
Int. Cl. C08g *20/06*
U.S. Cl. 260—78 A **11 Claims**

Poly-β-alanine is produced by reacting acrylonitrile with formic acid at a temperature of 150°–300° C. (preferably 200°–240° C.) under pressure.

3,629,204
EPOXY RESIN COMPOSITION AND ITS PRODUCTION

Mitsuo Yoshihara, Takatsuki, and Kazunori Mizutani, Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,318
Claims priority, application Japan, Sept. 3, 1968, 43/63,231
Int. Cl. C08g *23/08*
U.S. Cl. 260—78.4 EP **9 Claims**

Novel curable epoxy resin compositions with high arc and tracking resistance are provided by the present invention. The novel resins are prepared by reaction of a dicarboxylic acid diglycidyl ester with an aliphatic or alicyclic carboxylic acid ester which is then reacted with an aliphatic or alicyclic dicarboxylic acid anhydride. The product is then cured to obtain a viscous composition which may be further cured and molded.

3,629,205
THIOL DERIVATIVES OF OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Walter Stamm, Tarrytown, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,798
Int. Cl. C08f *27/06, 45/58*
U.S. Cl. 260—78.5 **12 Claims**

Olefin-maleic anhydride copolymers are provided wherein a portion of the anhydride moieties are converted to thio anhydride moieties. Other thio derivatives are also provided including the thio acids. These compounds are effective as stabilizers in vinyl type resins, particularly vinyl chloride polymers and can also serve as chelating agents.

3,629,206

CURING OF LIQUID POLYTHIOPOLYMERCAPTAN POLYMERS

Harry B. Stephenson and William J. Clapson, Joplin, Mo., and Edwin L. Wolkar, Baxter Springs, Kans., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

No Drawing. Filed July 16, 1969, Ser. No. 842,328
Int. Cl. C08g 25/00
U.S. Cl. 260—79 12 Claims

Curing of liquid organic polythiopolymercaptan polymers with curing systems which are capable of affecting rapid cures at room temperatures and which will produce white or light-colored elastomeric or plastic products amenable to tinting or coloring. The curing system consists essentially of an alkyl thiuram polysulfide and at least one lead salt selected from the group consisting of a basic lead salt, a normal lead salt and mixtures thereof.

3,629,207

PHOSPHORUS-CONTAINING POLYMERS

Denis Coleman, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application May 5, 1966, Ser. No. 547,768, now Patent No. 3,517,087. Divided and this application Sept. 12, 1969, Ser. No. 857,550
Int. Cl. C08g 33/02, 33/16
U.S. Cl. 260—79.3 R 6 Claims

In an inert neutral organic solvent substantially free from water, tris-aziridinyl phosphine oxide and sulfide react with phosphoric acid and with sulfuric acid to form a precipitate of a 1:1 addition polymer which is insoluble, stable at elevated temperatures, and finely divided. Such novel polymers are useful as fire-retardant in fibers in which they can be dispersed by incorporation in the spin dope prior to extrusion.

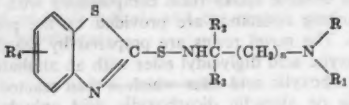
3,629,208

N-AMINOALKYL THIAZOLESULFENAMIDES AS VULCANIZATION ACCELERATORS

John Joseph D'Amico, Akron, and Darrell Dexter Mullins, Norton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 18, 1969, Ser. No. 834,513
Int. Cl. C08f 27/06, 45/60
U.S. Cl. 260—79.5 B 9 Claims

Benzothiazolyl sulfenamides having the formula



wherein R is hydrogen or lower alkyl, R_1 is lower alkyl, cycloalkyl, aralkyl, unsubstituted aryl, aryl substituted by alkyl, hydroxy, arylamino, alkoxy, chloro, fluoro, bromo or iodo or

together form a heterocyclic ring or substituted heterocyclic ring where the substituent is alkyl or benzothiazolylthio, R_2 is hydrogen, lower alkyl,

where

is the same as above, R_3 is hydrogen, lower alkyl or taken together with the carbon to which they are attached R_2 and R_3 represent lower cycloalkyl of four to eight carbon atoms, R_4 is hydrogen, lower alkyl, alkoxy, nitro, phenyl, chloro, fluoro, bromo, iodo, and *n* is one or two, which sulfenamides accelerate the vulcanization of rubber.

3,629,209

INTERPOLYMERS OF ETHYLENE AND ACRYLAMIDES

David W. McDonald, Ladue, Mo., and George A. Mortimer, La Marque, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 458,365, May 24, 1965, which is a continuation-in-part of application Ser. No. 390,177, Aug. 17, 1964, both now abandoned. This application Aug. 28, 1968, Ser. No. 755,836
Int. Cl. C08f 15/04
U.S. Cl. 260—80.73 3 Claims

Hard, tough, transparent interpolymers of ethylene consisting essentially of 99.5 to 75 mol percent of ethylene and from about 0.5 to about 25.0 mol percent of a compound selected from the group consisting of N-ispropylacrylamide, N-tert-butylacrylamide and mixtures thereof.

3,629,210

THIOPEROXYDIPHOSPHATES AND COPPER SALTS AS VULCANIZATION ACCELERATORS

David Apotheker and Sylvain M. Hirsty, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 11, 1969, Ser. No. 815,489
Int. Cl. C08f 27/06; C08c 11/34, 11/66
U.S. Cl. 260—79.5 6 Claims

A new class of vulcanization promoters for vulcanizing sulfur-curable hydrocarbon backbone elastomers in the presence of sulfur and a thioperoxydiphosphate accelerator. The promoters are cupric salts of organic acids and especially of the thioacids: 2-mercaptobenzothiazole, O,O-diesters of phosphorodithioic acid, O-esters of arylphosphonodithioic acids, aryldithiocarboxylic acids, and certain carboxylic acids. A new vulcanization process using organic cupric salts as promoters.

3,629,211

COPOLYMERS OF STYRENE AND PROCESS FOR PREPARATION THEREOF

Meguma Nozaki, Niihama-shi, Japan, assignor to Sumitomo Chemical Co., Ltd., Osaka-shi, Osaka, Japan

No Drawing. Filed June 30, 1970, Ser. No. 51,386
Claims priority, application Japan, June 30, 1969, 44/51,941
Int. Cl. C08f 17/00
U.S. Cl. 260—80.78 16 Claims

Copolymers of styrene having improved heat resistance and mechanical properties are provided by copolymerizing a styrene monomer with an m-alkyl-α-alkylstyrene and a p-alkyl - α-alkylstyrene. A mixture of a predominantly styrene monomer and another copolymerizable vinyl monomer can also be used in place of the styrene monomer alone. The combined amount of the nuclear-substituted alkyl-α-alkylstyrenes is 100–10, preferably 70–25, parts by weight per 100 parts by weight of the styrene monomer or mixture. The weight ratio of the m-alkyl-α-alkylstyrene to the p-alkyl-α-alkylstyrene ranges from 35:65 to 85:15, preferably from 45:55 to 75:25.

3,629,212

REACTIVATION OF ZIEGLER-TYPE CATALYSTS

Kurt Benedikter, Karl Otto Hagel, and Klaus Kiepert, Marl, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

No Drawing. Continuation of abandoned application Ser. No. 548,051, May 6, 1966. This application Aug. 26, 1969, Ser. No. 853,627

Claims priority, application Germany, May 8, 1965, P 15 70 352.3

Int. Cl. C08f *1/56, 15/04*

U.S. Cl. 260—80.78 6 Claims

Ziegler catalysts are reactivated after the catalysts are either partially or preferably completely inactive by the addition of a variety of reactivators, notably sulfur compounds, such as thionyl chloride. The preferred process comprises at least three serially connected reactors wherein the reactivators are continuously added to all but the first reactor.

3,629,213

METHOD OF PREPARING CONJUGATED DIENE POLYMERS BY USING ORGANOLITHIUM BARIUM-CONTAINING COMPOUND CATALYST SYSTEM

Akira Onishi, Ryota Fujio, Minoru Kojima, and Hiroshi Kawamoto, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed June 3, 1969, Ser. No. 830,136

Claims priority, application Japan, June 8, 1968, 43/38,979; Aug. 21, 1968, 43/59,220

Int. Cl. C08d *3/08*

U.S. Cl. 260—82.1 24 Claims

Conjugated dene polymers having a desirable microstructure for a rubbery elastomer is produced by contacting at least one conjugated diene or a mixture of a conjugated diene with a vinyl-substituted aromatic hydrocarbon with a catalyst consisting of an organolithium compound and a barium compound. In the polymers of at least one conjugated diene, the polymers having a low content of 1,2- or 3,4-structure and a high trans-1,4-structure in conjugated diene unit can be obtained by adjusting the ratio of the catalyst components and in the copolymers of a conjugated diene and a vinyl-substituted aromatic hydrocarbon, the copolymers having a microstructure of a low vinyl content and a high randomness can be formed.

3,629,214

PROCESS FOR THE COPOLYMERIZATION OF VINYLTRIALKOXYSILANES

Robert Buning, Oberlar, and Hans-Joachim Kotzsch, Rheinfelden, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

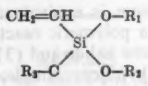
No Drawing. Filed Sept. 5, 1968, Ser. No. 758,194

Claims priority, application Germany, Sept. 8, 1967, D 54,067

Int. Cl. C08f *15/02*

U.S. Cl. 260—85.5 12 Claims

Process for the preparation of copolymers of vinyltrialkoxylsilanes with other suitable monomers comprising contacting a vinyltri-tert.-alkoxy silane having the formula:



wherein R_1, R_2 and R_3 each represent tertiary alkyl of the formula:

wherein A, B and D are each alkyl, with another monomer copolymerizable therewith under polymerization conditions.

The resultant novel copolymers are free of crosslinking. are characterized by Si—C bonds which are interconnected by C—C bonds. They are thermoplastic and can be easily worked in extruders, deep drawing machines, rolling mills, etc.

3,629,215

1:1 ALTERNATING COPOLYMERS OF SUBSTITUTED CONJUGATED VINYL COMPOUNDS AND OLEFINIC COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Kohei Nakaguchi, Osaka, Shohachi Kawasumi, Kobe, Masaaki Hirooka, Ibaraki-shi, Hiroshi Yabuuchi, Takatsuki-shi, and Hiroyoshi Takao, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation of application Ser. No. 567,353, July 25, 1966. This application Oct. 31, 1969, Ser. No. 871,781

Claims priority, application Japan, July 30, 1965, 40/46,495

Int. Cl. C08f *3/40, 3/62, 3/74*

U.S. Cl. 260—85.5 HC 41 Claims

An alternating copolymer consists of [A] a terminally unsaturated olefinic compound, for example, an α-olefin, an isoolefin, or a halogenated olefinic compound (vinyl chloride, vinylidene chloride, allyl chloride or the like) and [B] a substituted conjugated vinyl compound, such as a substituted acrylonitrile or a substituted acrylic acid derivative (esters, amides, acids, acid halides, ketones, acrolein and the like) which has a substituent, such as a hydrocarbon, halogenated hydrocarbon or halogen substituent on the α- or β-position. Said alternating copolymer can be prepared by subjecting said monomers to copolymerization with an organoaluminum halide or an organoboron halide or a product of reaction between an organic compound of a metal of Groups IIb, IIIb and IVb of the Periodic Table and a halide of a metal of Groups IIIb and IVb of the Periodic Table in the presence of at least said substituted conjugated vinyl compound, at least one of said organic compound and halide being aluminum or boron-containing compound.

3,629,216

PROCESS FOR THE POLYMERIZATION OF OLEFINS

Koichiro Iwasaki and Kazuo Yamaguchi, Tokyo, Junichi Matsuura, Kanagawa-ken, Masayoshi Hasuo, Tokyo, and Kazuhisa Kojima, Kanagawa-ken, Japan, assignors to Mitsubishi Chemical Industries Limited

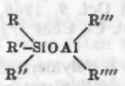
No Drawing. Filed May 7, 1969, Ser. No. 822,741

Claims priority, application Japan, May 14, 1968, 43/32,072

Int. Cl. C08f *1/66, 15/40, 3/06*

U.S. Cl. 260—88.2 10 Claims

The catalyst of the invention comprises a first and a second catalyst component. The first catalyst component is prepared by immersing at least one of a heat-resistant metal oxide selected from the group consisting of silica and silica-alumina into an aqueous solution of chromium trioxide, drying the immersed metal oxide and then calcining it in a gaseous oxygen atmosphere at a temperature ranging from 500° to 1000° C. The second catalyst component comprises a pentaalkylsiloxyalane having the formula:



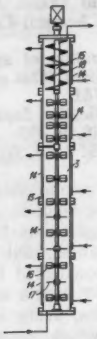
wherein R, R′, R″, R‴ and R⁗ are each an alkyl group having 1–10 carbon atoms, and the atomic ratio of silicon in the pentaalkylsiloxyalane to chromium in the chromium oxide is in the range of 0.01–500 in terms of Si/Cr.

3,629,217

PROCESS AND APPARATUS FOR THE CONTINUOUS PREPARATION OF A SPINNABLE SOLUTION OF ACRYLONITRILE POLYMERS

Georges Balitrand, Caluire, and Andre Mison, Jean Roget, and Philippe Tarbouriech, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed July 28, 1969, Ser. No. 845,297
Claims priority, application France, July 30, 1968, 161,208
Int. Cl. C08f *3/76*; B01j *1/00*
U.S. Cl. 260—88.7 6 Claims



Polyacrylonitrile solutions suitable for spinning are advantageously produced by solution polymerisation in a reactor having an axial shaft carrying discs separating the reactor into separate reaction zones, turbines for stirring the zones separately, and scrapers for the upper part of the reactor.

3,629,218

PROCESS FOR THE PREPARATION OF POLYVINYL FLUORIDE HAVING LOW K-VALUES

Gerhard Bier, Troisdorf, Werner Trautvetter, Spich, and Gregor Weisgerber, Ittenbach, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Mar. 24, 1969, Ser. No. 810,445
Claims priority, application Germany, Mar. 28, 1968, P 17 70 071.9
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.1 7 Claims

Process for the preparation of polyvinyl fluoride which comprises polymerizing vinyl fluoride in aqueous phase at a temperature above the critical temperature of vinyl fluoride, in the presence of a water soluble polymerization catalyst and 0.05 to 0.5 wt. percent of trans-1,2-dichloroethylene based on the vinyl fluoride.

3,629,219

PROCESS FOR INCREASING THE SURFACE AREA OF GRANULAR POLYTETRAFLUOROETHYLENE RESIN

Richard B. Esker, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 9, 1968, Ser. No. 766,314
Int. Cl. C08f *3/24*
U.S. Cl. 260—92.1 8 Claims

Tetrafluoroethylene is polymerized to granular polymer in an aqueous polymerization system containing free radical initiator and dispersing agent which produces polymer of increased specific surface area. Titration of the buffer into the system during polymerization or elimination of the buffer entirely further increases the specific surface area of the granular polymer produced.

3,629,220

HOMOPOLYMERIZATION OF VINYL CHLORIDE WITH ACYL SULFONYL PEROXIDE INITIATOR

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation

No Drawing. Filed June 9, 1969, Ser. No. 831,740
Int. Cl. C08f *1/62, 3/30*
U.S. Cl. 260—92.8 21 Claims

Vinyl chloride is polymerized at a temperature below about +20° C. to solid homopolymer, using an initiator system of acyl sulfonyl peroxide, certain amines and, optionally, reducing agent. Example: Suspension polymerization of vinyl chloride at 0° C. for 16 hours gave 95% conversion using acetyl t-butylsulfonyl peroxide, ascorbic acid, and N,N-dimethylaniline, in weight parts of 1/0.44/0.06 per 100 parts by weight of monomer. In the absence of ascorbic acid, an 82% conversion is obtained. The sulfonyl peroxide alone gives 30% conversion.

3,629,221

PROCESS FOR MANUFACTURING POLYMERS OF DICYCLOPENTADIENE DERIVATIVES

Morimasa Arakawa, Ashiya, Akisato Katanosaka, Osaka, and Masafumi Chikazawa, Kyoto, Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed June 2, 1970, Ser. No. 42,866
Claims priority, application Japan, June 5, 1969, 44/44,485
Int. Cl. C08f *5/00*
U.S. Cl. 260—93.1 5 Claims

A process for manufacturing a polymer of dicyclopentadiene derivative comprises hydrogenating dicyclopentadiene to produce dihydrodicyclopentadiene and polymerizing the resultant dihydrodicyclopentadiene in the presence of a metal halide catalyst.

3,629,222

OLEFIN POLYMERIZATION CATALYSTS

Harry W. Coover, Jr., and Frederick B. Joyner, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 23, 1961, Ser. No. 90,961
Int. Cl. C08f *3/02*
U.S. Cl. 260—93.7 2 Claims

Catalyst for the production of solid, crystalline α-monoolefinic hydrocarbon polymers comprising (1) a compound selected from the group consisting of halides and lower alkoxides of a transition metal selected from the group consisting of titanium, zirconium, vanadium, chromium and molybdenum, (2) at least one component selected from the following: (a) a metal from Groups I*a*, II and III*a* of the Periodic Table, alkyl and hydride derivatives of the metals in Groups I*a*, II and III*a* of the Periodic Table and complex metal hydrides of aluminum and alkali metal; (b) organo-aluminum halides having the formula R_mAlX_n and $R_3Al_2X_3$ wherein R is a hydrocarbon radical selected from the group consisting of lower alkyl, cycloalkyl, phenyl and tolyl, X is a halogen selected from the group consisting of chlorine and bromine and *m* and *n* are integers whose sum is equivalent to the valence of aluminum; and (c) a polymeric reaction product of aluminum and a methylene halide and (3) a third component which is N,N-dimethylthioacetamide, ethyl thiocyanate, tribenzylphosphine oxide, pyridine-N-oxide, 2,3-octadione, diphenyl disulfide, N,N′-diphenylformamidine, dithiooxamide, β-chloroethyl ether, tetramethylthiourea, o-tolyl isocyanate, nitrosobenzene, trimethysulfonium iodide, tetramethylphosphonium bromide, pyrazine, malononitrile, phenylantimony oxide, phenylarsenic oxide, tetramethyldiarsine, nitrobenzene, 2-nitropropane, diphenyl disulfoxide, azoxybenzene, azobenzene, phosphazobenzene, ethyl thiolacetate, phenyl isothiocyanate, arsenobenzene, acetone phenylhydrazone, triphenylstibine sulfide, tetramethyldistibine and arsenophosphobenzene.

3,629,223

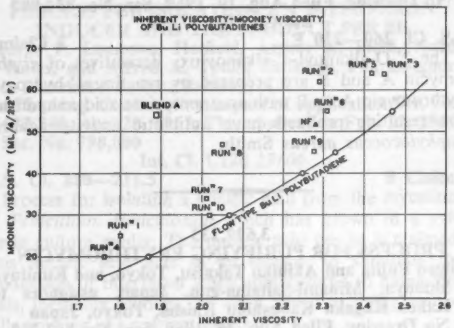
POLYMER AND PROCESS

Norman F. Keckler, Stow, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of abandoned application Ser. No. 601,159, Dec. 12, 1966. This application Sept. 29, 1969, Ser. No. 863,019

Int. Cl. C08d *3/06, 3/08;* C08f *3/16*

U.S. Cl. 260—94.2 1 Claim



1,3-butadiene which contains at least 400 p.p.m. of 1,2-butadiene (or its equivalent in alpha-acetylenes, carbonyls or propadiene) is polymerized at a temperature of 315° F. or higher with a lithium catalyst.

3,629,224

AQUEOUS PHASE POLYMERIZATION OF ETHYLENE

Enrico Cernia and Arturo Rio, Colleferro, Rome, and Natale Ercoli Malacari and Corrado Mancini, Milan, Italy, assignors to Societa Asfalti Bitumi Cementi e Derivati, S.p.A., Rome, Italy

No Drawing. Continuation-in-part of application Ser. No. 436,645, Mar. 2, 1965. This application June 3, 1969, Ser. No. 830,111

Claims priority, application Italy, Mar. 10, 1964, 5,195/64

Int. Cl. C08f *1/60, 3/06*

U.S. Cl. 260—94.9 A 7 Claims

Ethylene is polymerized by contacting and agitating gaseous ethylene with an aqueous solution containing a low concentration of a free radical initiator and a nonionic surfactant in a concentration below its critical micelle concentration, at a temperature below 100° C. and under a pressure of about 10 to 100 atmospheres for a period of time of about ½ to about 8 hours. The molecular weight of the product increases with increasing periods of polymerization. Polyethylene having a high degree of linearity, high purity and a narrow distribution of molecular weight over the range of about 50,000 to 350,000 is obtained by the process.

3,629,225

REDUCTION OF SULFUR ACTIVITY OF SULFURIZED ALKYL PHENOLS

Nylen L. Allphin, Jr., Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,497

Int. Cl. C07g *17/00;* C10m *1/38*

U.S. Cl. 260—137 2 Claims

The sulfur activity of sulfurized alkyl phenol lubricating oil additives towards silver is reduced without reduction in the activity of the additive by treatment of the sulfurized alkyl phenol lubricating oil additive with a tervalent phosphorous compound.

3,629,226

CURABLE COMPOSITIONS OF MATTER

Friedrich Lohse, Allschwil, Rolf Schmid, Munchenstein, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

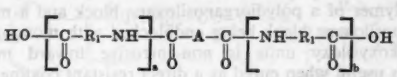
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,382

Claims priority, application Switzerland, Jan. 31, 1968, 1,470/68; Sept. 5, 1968, 13,325/68

Int. Cl. C08g *45/14, 45/12*

U.S. Cl. 260—835 17 Claims

Compositions which can be converted to rubber-elastic plastic products on warming, characterised in that they contain long-chain polyester-polyamide-dicarboxylic acids of formula

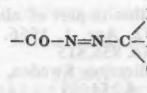


wherein R_1 represents a branched or unbranched alkylene residue having 2 to 11 carbon atoms in the linear chain, preferably the pentamethylene residue, and a and b denote zero or an integer, with the sum $(a+b)$ being at least 1 and at most 8, and wherein A denotes a branched or unbranched hydrocarbon chain interrupted by at least two ester groups

wherein, in the structural unit of the polyester residue A, the number of carbon atoms in hydrocarbon residues divided by the number of oxygen bridges is 3 to 32, wherein furthermore the total number of carbon atoms present in hydrocarbon residues in the residue A is at least 10, and wherein at least 1.0 and at most 7.0 equivalents of amide groups per kg. are present in the polyester-polyamide-dicarboxylic acid mentioned, and also diepoxide compounds, with 0.6 to 1.2, preferably 0.8 to 1.0, equivalents of carboxyl groups being present per 1 equivalent of epoxide groups.

3,629,227

AZOACYL COMPOUNDS CONTAINING A GROUP



Walter Meckel, Dusseldorf, and Erwin Muller, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,212

Claims priority, application Germany, Sept. 28, 1967, F 53,613

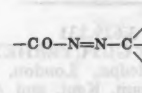
Int. Cl. C07c *107/00;* C09b *27/00*

U.S. Cl. 260—174 6 Claims

Azoacyl compounds having the formula

X—Y

wherein Y represents a group of the formula



in which R and R′ each individually is alkyl, with the proviso that R and R′ when taken together with the carbon atom to which they are attached, represent a cycloaliphatic radical, and X is selected from the group consisting of alkyl, aryl, substituted aryl which is substituted with 1–2 substituents selected from the group consisting of alkyl, halo and a Y group, aliphatic, such aliphatic which is interrupted by a hetero atom, and such aliphatic which is substituted with a Y group. The azoacyl com-

pounds are useful as blowing agents for foaming plastic materials such as crepe rubber, polyvinyl chloride, and the like.

3,629,228

NON-CORROSIVE SILOXANE VULCANIZABLE AT ROOM TEMPERATURE

Robert C. Hartlein, Midland, and Carl R. Olson, Freeland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,290
Int. Cl. C08k *1/66*
U.S. Cl. 260—185 6 Claims

A room temperature vulcanizable alkoxy siloxane block copolymer of a polydiorganosiloxane block and a monoorganosiloxane block being endblocked with monoorganodialkoxysiloxy units is non-corrosive toward metals and is useful when cured as a direct resistant coating.

3,629,229

WATER SOLUBLE BASIC ALUMINUM POLYHYDROXYL HYDROCARBON COMPLEXES

Horst W. Schmank, Ringgold, Ga., assignor to Chattem Chemicals, Division of Chattem Drug & Chemical Company, Chattanooga, Tenn.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,119
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R 7 Claims

This invention relates to water soluble aluminum-polyhydroxyl hydrocarbon complexes in which a cationic moiety is loosely bonded to the reaction product between aluminum hydroxide and a polyhydroxyl hydrocarbon such as a sugar.

The compositions of the present invention are particularly useful as soluble antacids, as textile treating agents, as intermediates for the preparation of other aluminum compounds, as gelling agents, water purifiers and paint and ink additives.

3,629,230

QUATERNIZATION WITH ALKYLENE OXIDES

Bjorn Gunnar Folke Soderqvist, Uppsala, Sweden, assignor to Pharmacia Fine Chemicals AB, Uppsala, Sweden

No Drawing. Continuation-in-part of abandoned application Ser. No. 539,572, Apr. 1, 1966. This application Sept. 10, 1969, Ser. No. 856,815
Claims priority, application Sweden, Apr. 2, 1965, 4,254/65
Int. Cl. C08b *19/08, 29/28*
U.S. Cl. 260—209 D 7 Claims

Novel method for producing quaternization products of amino group-substituted cellulose and of amino group-substituted hydrophilic, water-swellable and water-insoluble copolymerizates of polyhydroxy compounds with bifunctional substances. These quaternization products have a high degree of quaternization, preferably amounting to at least about 80 percent. The novel products are preferably, but not solely, intended for use in grain form for ion-exchange chromatography.

3,629,231

DERIVATIVES OF GLYCYRRHETINIC ACID

Leslie Hough, Wimbledon, London, John Cameron Turner, West Wickham, Kent, and Anthony William Lewis, London, England, assignors to Biorex Laboratories Limited, London, England

No Drawing. Filed May 5, 1969, Ser. No. 821,988
Claims priority, application Great Britain, May 23, 1968, 24,705/68; Nov. 11, 1968, 53,327/68; Mar. 3, 1969, 11,169/69
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 7 Claims

The present invention is concerned with new derivatives of glycyrrhetinic acid and with the preparation thereof. The new derivatives according to the present invention have been found to possess extremely good anti-inflammatory properties, while having very low toxicities.

3,629,232

2'-O-ALKANOYL-4'-ALKANOYLOXY DERIVATIVES OF ERYTHROMYCIN

Peter Hadley Jones, Lake Forest, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Aug. 19, 1969, Ser. No. 854,807
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 3 Claims

The 2'-O-alkanoyl-4'-alkanoyloxy derivatives of erythromycin A and B are prepared by reacting 4'-hydroxy-erythromycin A or B with an appropriate acid anhydride. The resulting products have antibiotic activity against *Staphylococcus aureus* Smith.

3,629,233

PROCESS FOR PURIFYING ERYTHROMYCIN

Shigeo Fujita and Akihiko Takatsu, Tokyo, and Kunitoyo Shibuya, Minami-Saitama-gun, Japan, assignors to Kaken Kagaku Kabushiku Kaisha, Tokyo, Japan

No Drawing. Filed Aug. 26, 1969, Ser. No. 853,209
Claims priority, application Japan, Oct. 15, 1968, 43/74,691
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 5 Claims

Erythromycin-containing broth filtrate, or other crude aqueous solutions containing erythromycin, is passed over a porous type cation-exchange resin, the resin is washed with a dilute aqueous solution of a water-soluble alcohol, and the erythromycin is eluted from the resin with an alkaline-concentrated aqueous solution of a water-soluble alcohol. Crystals of erythromycin are obtained in high yield.

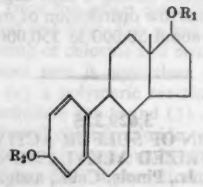
3,629,234

ESTRADIOL-17β-RHAMNOSIDES

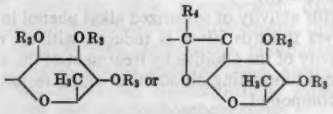
Wolfgang Eberlein, Biberach (Riss), Joachim Heider, Warthausen-Oberhofen, and Hans Machleidt and Gunther Engelhardt, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.B., Ingelheim am Rhine, Germany

No Drawing. Filed May 1, 1969, Ser. No. 821,558
Claims priority, application Germany, May 3, 1968, P 17 68 350.0-42
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 9 Claims

Estrogenic estradiol-17β-rhamnosides of the formula



wherein R_1 is



where

R_3 is hydrogen or lower alkanoyl, preferably acetyl, and R_4 is lower alkyl, preferably methyl, and

R_2 is hydrogen, lower alkyl, lower alkanoyl, benzyl, tetrahydropyranyl or MeO_3S—, where Me is an alkali metal; the compounds are useful for the treatment of the menopausal syndrome, amenorrhea, endometritis and colpitis.

3,629,235

PROCESS FOR ISOLATING AN INTERFERON INDUCER AND THE PRODUCT PER SE

George P. Lampson, Hatfield, Arthur K. Field, North Wales, and Alfred A. Tytell, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 632,240, Apr. 20, 1967. This application Feb. 12, 1969, Ser. No. 798,800

Int. Cl. C12d *13/06*

U.S. Cl. 260—211.5 9 Claims

Process for isolating a nucleic acid from the mycelium of *Penicillium funiculosum* which has grown in a synthetic culture media. The nucleic acid per se is claimed. This nucleic acid acts as an inducer to stimulate the production of interferon when administered to living animals, including humans, or when added to living animal cells growing in a nutrient media.

3,629,236

METHOD FOR THE PRODUCTION OF 2-MERCAPTOINOSINE

Mikio Honjo, Kinichi Imai, and Kunio Kobayashi, Osaka-fu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,246

Claims priority, application Japan, Aug. 21, 1968, 43/59,690

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 4 Claims

2-mercaptoinosine is obtained in a high yield by reacting under mild reaction conditions 5-amino-1-β-D-ribofuranosyl-4-imidazolecarboxamide with an isothiocyanate having the formula:

$$R—N=C=S$$

wherein R stands for phenyl or halophenyl.

3,629,237

COMPOSITIONS USEFUL AS ENTERIC COATINGS AND METHOD FOR PREPARING ACID PHTHALATES OF CELLULOSE ETHERS FOR THEM

Shunichi Koyanagi, Kinya Ogawa, and Akira Yamamoto, Niigata-ken, Japan, assignors to Shinetsu Chemical Company, Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Sept. 2, 1969, Ser. No. 854,789

Claims priority, application Japan, Sept. 12, 1968, 43/65,949, 43/65,950; Mar. 10, 1969, 44/18,152

Int. Cl. C08b *11/00*

U.S. Cl. 260—226 5 Claims

Acid phthalate of cellulose ethers represented by the general formula:

$$R^1{}_mR^2{}_nA$$

where R^1 is a hydroxyalkyl group of 3 or 4 carbon atoms, R^2, hydrogen or an alkyl group of 1 or 2 carbon atoms, *m* and *n* are positive integers, and A is residual cellulose structure which ethers are readily soluble in weak alkaline solution, besides possessing high solubility in organic solvents and excellent resistance to water; they are useful as enteric coatings, and drugs coated with them can stand long storage and are readily soluble upon passing into the intestines, thereby enhancing the effect of the drugs.

3,629,238

NOVEL GLUCURONIDES OF 3-INDOLYLALIPHATIC ACID DERIVATIVES

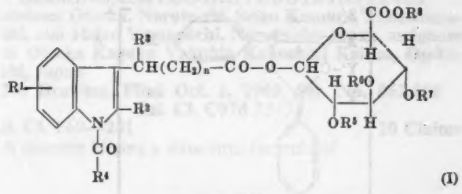
Seitetsu Arasaki, Minoo-shi, Atsushi Wakimura, Takarazuka-shi, Hisao Yamamoto, Nishinomiya-shi, and Shigeho Inaba, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,327

Int. Cl. C07c *69/32*

U.S. Cl. 260—234 6 Claims

Glucuronides of 3-indolylaliphatic acid derivatives represented by the formula,



(I)

wherein R^1 is hydrogen, lower alkyl, lower alkoxy, lower alkylthio or halogen, R^2 and R^3 are individually hydrogen, phenyl or lower alkyl, R^4 is pyridyl or styryl, R^5, R^6 and R^7 are individually hydrogen or acetyl, R^8 is hydrogen or lower alkyl, and *n* is 0, 1 or 2. The novel glucuronides of 3-indolylaliphatic acid derivatives have prominent anti-inflammatory action.

3,629,239

PROCESS FOR PREPARING AZIRIDINE DERIVATIVES

Keizo Kitahonoki, Ikoma-gun, and Katsumi Kotera, Michima-gun, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 510,046, Nov. 26, 1965. This application Sept. 3, 1969, Ser. No. 855,019

Claims priority, application Japan, Nov. 26, 1964, 39/66,755; Aug. 13, 1965, 40/49,466

Int. Cl. C07d *23/02, 23/06, 31/42*

U.S. Cl. 260—239 E 6 Claims

Novel process for preparing aziridine derivatives which comprises reducing an oxime compound with a metallic hydride complex in an inert solvent.

3,629,240

17β-(1-CYCLOALKENYL) OXY-2α,3α-EPITHIO-5α-ANDROSTANES

Taichiro Komeno, Osaka-shi, Japan, assignor to Shinogi & Co., Ltd., Osaka, Japan

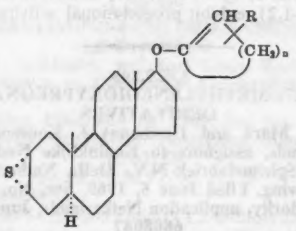
No Drawing. Filed July 22, 1969, Ser. No. 843,759

Claims priority, application Japan, Aug. 26, 1968, 43/53,254

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.5 10 Claims

Hormonal (strong myogenic, anti-estrogenic, etc.) 17β-(1-cycloalkenyl)oxy-2α,3α-epithio-5α - androstane compounds of the formula:



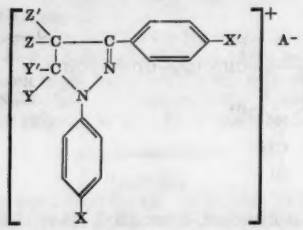
wherein R represents a hydrogen atom or a lower alkyl group and *n* is an integer of from 3 to 5, the medicine containing them and processes for preparation thereof.

3,629,241
TEXTILE OPTICAL BRIGHTENERS

Horst-Jurgen Krause and Manfred Dohr, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

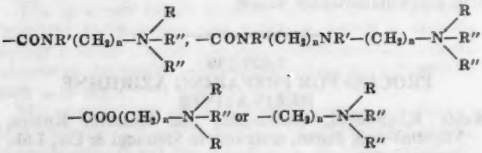
No Drawing. Filed June 26, 1969, Ser. No. 836,959
Claims priority, application Germany, July 2, 1968, P 17 70 773.2
Int. Cl. C07d *49/10*
U.S. Cl. 260—239.9 4 Claims

An optical brightener for textiles having the formula



wherein

X is $-SO_2NH_2$, $-SO_2R$, $-SO_2-OR$, $-COOR$, $-CONH_2$, $-CN$, $-CF_3$, halogen, $-OR$, or $-R$;
X′ is halogen, $-OR$ or $-R$;
Y is



Y′ is H, —R or phenyl;
Z is H or Y;
Z′ is H or R;
R is alkyl having 1 to 4 carbon atoms;
R′ is H or R;
R″ is R or $-(CH_2)_{n-1}-CH_2OH$;
n is an integer from 2 to 4; and
A^- is an anion of an acid.

3,629,242
6-GEM-DIFLUORO STEROIDS

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No. 763,918, Sept. 30, 1968, which is a continuation-in-part of application Ser. No. 676,060, Oct. 18, 1967. This application Mar. 3, 1969, Ser. No. 803,953
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 20 Claims

6α,6β-difluoropregn-4-en-3-ones (substituted at C–21 with fluoro or chloro thereof, optionally substituted at C–16 with hydroxy or methyl, at C–17 with hydroxy or the esters thereof, optionally, C–16 and C–17 are bridged by a cyclic acetal or ketal, optionally there is a double bond between C–1,2), exhibit progestational activity.

3,629,243
14α,17α-METHYLENEDIOXYPREGNANE DERIVATIVES

Arthur F. Marx and Hermanus J. Kooreman, Delft, Netherlands, assignors to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V., Delft, Netherlands

No Drawing. Filed June 5, 1969, Ser. No. 831,824
Claims priority, application Netherlands, June 7, 1968, 6808047
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D 41 Claims

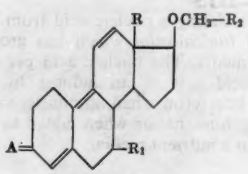
14α,17α - methylenedioxypregnane derivatives which have anti-inflammatory activity are provided. In the new pregnane compounds, positions 14 and 17 of the steroid nucleus are bridged by a carbon atom and two oxygen atoms, forming a 1,3-dioxane ring with carbon atoms 14, 13 and 17 of the steroid nucleus.

3,629,244
17β-ETHERS OF $\Delta^{4,9,11}$-GONATRIENES AND COMPOSITIONS CONTAINING THEM

Germain Costerousse, Montrouge, and Jean-Claude Gasc, Bondy, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 628,273, Apr. 4, 1967. This application Aug. 13, 1969, Ser. No. 850,346
Claims priority, application France, July 8, 1966, 68,751; Feb. 15, 1967, 95,053
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 16 Claims

This invention relates to 17β-ethers of $\Delta^{4,9,11}$-gonatrienes of the formula



wherein

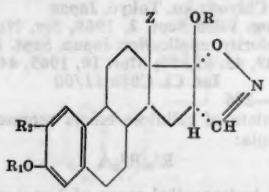
A represents a member selected from the group consisting of oxygen, di-lower-alkoxy and lower alkylene dioxy;
R represents alkyl having from 1 to 4 carbon atoms;
R_1 represents a member selected from the group consisting of hydrogen and lower alkyl; and
R_2 represents a member selected from the group consisting of substituted and unsubstituted phenyl, cyclohexyl, cyclohexenyl and cyclohexadienyl. These compounds have a particularly long-lasting and persistent anabolisant and androgenic activity, on subcutaneous administration.

3,629,245
16,17-ISOXAZOLINO-$\Delta^{1,3,5(10)}$-GONATRIENES

Daniel Bertin, Montrouge, and Lucien Nedelec, Clichy-sous-Bois, France, assignor to Roussel-UCLAF, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 556,796, May 9, 1966. This application July 7, 1969, Ser. No. 839,660
Claims priority, application Japan, May 14, 1965, 40/17,103; Aug. 11, 1965, 40/28,020
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.55 7 Claims

16α,17α-isoxazoline steroids of the formula



wherein R and R_1 are selected from the group consisting of hydrogen, alkyl of 1 to 7 carbon atoms and acyl of an organic carboxylic acids of 1 to 18 carbon atoms, R_2 is selected from the group consisting of hydrogen and halogen and Z is alkyl of 1 to 4 carbon atoms and their preparation and novel intermediates. The invention also includes hypocholesterolemic compositions having no substantial estrogenic activity.

3,629,246

NOVEL DIARYLENE AZOLYL-STYRENE COMPOUNDS AND THE PREPARATION AND USE THEREOF

Toshiki Tanaka, Wakayama, Japan, assignor to Nippon Chemical Works Co., Ltd., Wakayama, Japan

No Drawing. Continuation of application Ser. No. 265,365, Mar. 15, 1963. This application Dec. 4, 1968, Ser. No. 800,785

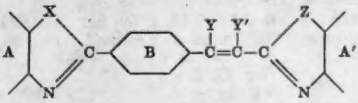
Claims priority, application Japan, July 4, 1962, 37/28,133; July 10, 1962, 37/28,326; July 24, 1962, 37/31,222; Sept. 4, 1962, 37/37,932, 37/37,933, 37/37,934; Nov. 5, 1962, 37/49,544; Nov. 29, 1962, 37/53,406; Dec. 19, 1962, 37/57,634, 37/57,635; Jan. 5, 1963, 38/649; Feb. 11, 1963, 38/6,829

The portion of the term of the patent subsequent to Feb. 23, 1988, has been disclaimed

Int. Cl. C09b *23/14*

U.S. Cl. 260—240 D 6 Claims

Optical brightening agents consist of a diarylene azolyl-styrene compound which is free from water-solubilizing groups and groups capable of imparting dye character thereto and which corresponds to the general formula:



wherein A and A′ individually represents a benzene or naphthalene radical fused with the adjacent azole ring, B represents a benzene nucleus, X and Z individually represents a member selected from the group consisting of oxygen, sulfur and a radical N—R (in which R is hydrogen or methyl), and at least one of said X and Z being selected from oxygen and sulfur and Y and Y′ individually represents one member selected from the group consisting of hydrogen, halogen and lower alkyl.

3,629,247

THIAZOLINE AND 5,6-DIHYDRO-4H-1,3-THIAZINE ANTIVIRAL AGENTS

James W. McFarland, Lyme, and Verne A. Ray, Groton, Conn., assignors to Pfizer & Co., Inc., New York, N.Y.

No Drawing. Filed June 6, 1969, Ser. No. 831,245

Int. Cl. C07d *91/14*

U.S. Cl. 260—240 D 4 Claims

Aryl vinyl derivatives of thiazoline and 5,6-dihydro-4H-1,3-thiazine which exhibit antiviral activity particularly in the combating of plant viral diseases.

3,629,248

PROCESS FOR THE PREPARATION OF OXAZINE DYESTUFFS

Gustav Schäfer, Frankfurt am Main, and Adam Trombetta, Niederjosbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals, Meister Lucius & Bruning, Frankfurt am Main, Germany

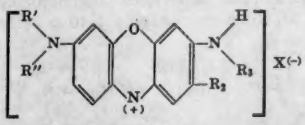
No Drawing. Continuation-in-part of application Ser. No. 655,756, July 25, 1967. This application July 24, 1969, Ser. No. 844,664

Claims priority, application Germany, Aug. 4, 1966, F 49,871

Int. Cl. C07d *87/50*

U.S. Cl. 260—242 2 Claims

A process for the manufacture of crystalline, pure and brilliant basic oxazine dyestuffs of the general formula



in which R′ and R″ represent lower alkyl groups, R_2 represents a hydrogen atom or a methyl group, R_3 stands for a hydrogen atom or a lower alkyl group or the phenyl group which may be substituted by methyl, methoxy or ethoxy groups, and $X^{(-)}$ represents the anion $ZnCl_3^-$ or $ZnBrCl_2^-$, said dyestuffs yielding on tanned cotton and on polyacrylonitrile fibres brilliant blue dyeings, showing good to very good fastness to light and an excellent fastness to wet processing on polyacrylonitrile fibres.

3,629,249

DIAMINOALKYL-S-DIHYDROTETRAZINES

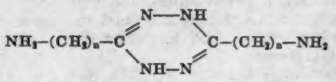
Masatomi Otsuka, Naruto-shi, Seizo Komura, Tokushima-shi, and Hideo Yamaguchi, Naruto-shi, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,956

Int. Cl. C07d *55/58*

U.S. Cl. 260—241 10 Claims

A diamine having a structural formula of



wherein *n* is an integer of 3 to 16.

Said diamines are useful as the starting material for manufacturing polyamides and manufactured from lactams or amino acids.

3,629,250

FUNGICIDAL BENZOTHIADIAZINE-2,3-DIOXIDES

Edward L. Mutsch, Woodbury Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 14, 1969, Ser. No. 841,537

Int. Cl. C07d *93/30*

U.S. Cl. 260—243 4 Claims

1-trihalomethylthio-3-alkyl-3,4-dihydro-1H-2,1,3 - benzothiadiazine-2,2-dioxides which are active fungicides, insecticides and antimicrobial agents, and processes for their production and use are described.

3,629,251

DERIVATIVES OF 9-AMINOALKYL-1,2,8,9-TETRAAZAPHENALENES

John E. Francis, Pleasantville, N.Y., assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Aug. 12, 1968, Ser. No. 751,730

Int. Cl. C07d *51/06*

U.S. Cl. 260—247.1 24 Claims

9-aminoalkyl-1,2,8,9-tetraazaphenalenes, optionally substituted in the 3-position by hydroxy or mercapto and in the 7-position by phenyl, are hypotensive agents.

3,629,252

3-ARYLIMINO-4-CHLORO-5-AMINO-1,2-DITHIOLS

Jorg Bader, Arlesheim, and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 28, 1969, Ser. No. 828,779

Claims priority, application Switzerland, June 7, 1968, 8,517/68

Int. Cl. C07d *71/00, 87/38*

U.S. Cl. 260—247.1 4 Claims

3-arylimino-4-chloro-5-amino - 1,2-dithiols are disclosed as antifungal and bactericidal agents. They are particularly useful for the protection of plants against phytopathogenic fungi. Antifungal compositions containing them as active ingredients are also described.

3,629,253
FLUORINATED 1,2-DIHYDRO-1,2,4-BENZOTRIAZINES

Theodor Wagner-Jauregg, Zofingen, Switzerland, and Egon Fitz, Dornbirn, Austria, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,349
Claims priority, application Switzerland, Sept. 27, 1967, 13,517/67
Int. Cl. C07d *55/10*
U.S. Cl. 260—247.2 A 5 Claims

This invention is directed to fluorinated 3-amino substituted 1,2-dihydro-1,2,4-benzotriazine derivatives having pharmaceutical and particularly antiphlogistic activity, and to the method of producing same by reducing the corresponding fluorinated 3-amino substituted 1,2,4-benzotriazine-1-oxide derivatives.

3,629,254
PRODUCTION OF 2,4-DISUBSTITUTED TRIAZINES

Heinz Eilingsfeld, Frankenthal, and Horst Scheuermann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,704
Claims priority, application Germany, Apr. 6, 1968, P 17 70 147.2
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 8 Claims

The production of 2,4-disubstituted triazines by reaction of substituted thiobuiurets with esters of formimidic acid. The products of the process are valuable starting materials for the production of dyes and pesticides.

3,629,255
FLUOROCARBON ESTERS OF ISOCYANURATE

Wilhelmus M. Beyleveld, Whippany, Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,681
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS 8 Claims

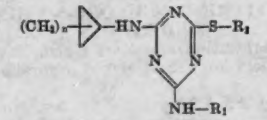
This invention relates to a novel class of fluorine containing isocyanurate esters derived from reacting tris(2-hydroxyethyl)isocyanurate with hereinafter defined fluoro acids, and tris(2-carboxyethyl)isocyanurate with hereinafter defined fluoro alcohols.

3,629,256
HERBICIDAL 2-ALKYLTHIO-4,6-DIAMINO-S-TRIAZINES

Dagmar Berrer, Riehen, and Christian Vogel, Binningen, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,429
Claims priority, application Switzerland, Mar. 20, 1968, 4,150/68
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 5 Claims

2-alkylthio-triazine derivatives of the formula



wherein n means 0 or 1, R_1 represents certain unsubstituted or substituted alkyl or cycloalkyl groups and R_2 represents methyl or ethyl are disclosed as herbicidally active compounds of enhanced toxicity to undersirable plant growth and improved selectivity. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

3,629,257
2-CHLORO-4-TERT-BUTYLAMINO-6-CYCLOPROPYLAMINO-s-TRIAZINE

Dagmar Berrer, Riehen, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,915
Int. Cl. C07d *55/20, 55/46*
U.S. Cl. 260—249.8 1 Claim

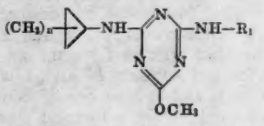
2 - chloro - 4-tert. butylamino-6-cyclopropylamino-s-triazine is discolsed as a novel compound useful for controlling aquatic weeds and also weeds and wild grasses in cotton plantations. Compositions containing the same as active ingredient and processes for the control of aquatic weeds and also weeds and wild grasses in cotton plantations are also described.

3,629,258
HERBICIDAL 4-METHOXY-2,6-DIAMINO-s-TRIAZINES

Dagmar Berrer, Riehen, and Christian Vogel, Binningen, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,430
Claims priority, application Switzerland, Mar. 20, 1968, 4,149/68
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 5 Claims

Methoxy-triazine derivatives of the formula



wherein n means 0 or 1, and R_1 represents certain unsubstituted or substituted alkyl or cycloalkyl groups are disclosed as herbicidally active compounds of enhanced toxicity to undesirable plant growth and improved selectivity. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

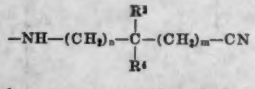
3,629,259
CYANOALKYLAMINOTRIAZINES

Werner Schwarze, Frankfurt am Main, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 652,036, July 10, 1967. This application Mar. 5, 1969, Ser. No. 804,718
Claims priority, application Germany, July 16, 1966, D 50,605; Nov. 22, 1966, P 16 70 541.2; Mar. 7, 1968, P 16 70 594.5
The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed
Int. Cl. C07d *55/20, 55/22*
U.S. Cl. 260—249.8 26 Claims

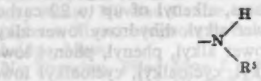
A substituted s-triazine of the formula:

wherein X is halogen, alkoxy, or alkylmercapto, alkyl in alkoxy and alkylmercapto having 1 to 6 carbon atoms; R^1 is



wherein n and m are zero or 1 with the provision that only one of n and m may be zero; R^3 and R^4 are the same

or different and are straight-chain or branched-chain alkyl having from 1 to 4 carbon atoms and wherein either R^3 or R^4 may also be hydrogen; and R^2 is



wherein R^5 is hydrogen or straight-chain or branched-chain lower alkyl.

The compounds are useful as plant growth modifiers and are distinguished by a high selectivity and a rapid decomposition in the ground.

3,629,260

S-TRIAZOLO[4,3-a]PYRAZINE DERIVATIVES

John Anthony Maguire and Francis Leslie Rose, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,816
Claims priority, application Great Britain, Feb. 3, 1967, 5,356/67
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 **4 Claims**

Novel s-triazolo[4,3-a]pyrazine derivatives bearing alkyl substituents in the pyrazine ring and an amino, hydroxy, acetamido or formamido substituent in the triazole ring, which prevent bronchospasm and are useful in the treatment of asthma.

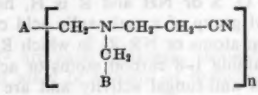
3,629,261

CHLOROPYRIMIDINE DERIVATIVES

Gunther Beck and Hans Holtschmidt, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,934
Claims priority, application Germany, Jan. 12, 1968, P 16 70 971.0
The portion of the term of the patent subsequent to Apr. 28, 1987, has been disclaimed
Int. Cl. C07d *51/36*
U.S. Cl. 260—251 R **8 Claims**

A process for preparing 4,5,6-trichloropyrimidines and analogous compounds containing a further chlorine substituent or a radical in the 2-position comprising reacting



in which

A is lower alkyl, a carbocyclic or heterocyclic aromatic radical;

B—CH_2— is a radical which can be split off under the reaction conditions e.g. methyl;

and *n* is 1 or 2;

with an excess of chlorine at a temperature of 0 to 250° C., optionally under UV irradiation. The resulting chloropyrimidines are fungicides and sporicides and are useful, as such, or as their fluoro analogs in preparing reactive dyestuffs.

3,629,262

PROCESS FOR PREPARING 4-PHENYL-QUINAZOLINES

Stanley C. Bell, Penn Valley, and Peter H. L. Wei, Springfield, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 729,838, Feb. 23, 1968, which is a division of application Ser. No. 447,545, Apr. 12, 1965. This application Sept. 5, 1969, Ser. No. 855,734
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 **4 Claims**

4-phenylquinazolines are prepared by reacting a 2-aminodiphenylmethyleneiminoacetic acid N-oxide with a reactant selected from the group of lower alkanoyl anhydrides and halo-(lower)alkanoyl anhydrides to form the corresponding 2'-[α-(hydroxymethylimino)benzyl]-(lower)alkanoyl anilide, alkanoate which is then cyclized to form the 4-phenylquinazolines. The products have known pharmaceutical properties which render them useful as muscle relaxants and vasodilators.

3,629,263

DIGLYCIDYL ETHERS

Hans Batzer, Arlesheim, Basel-Land, Juergen Habermeier, Allschwil, Basel-Land, and Daniel Porret, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Nov. 4, 1969, Ser. No. 870,547
Claims priority, application Switzerland, Nov. 11, 1968, 16,803/68
Int. Cl. C07d *49/32, 51/20, 51/30*
U.S. Cl. 260—257 **14 Claims**

New diglycidyl ethers of mononuclear, five-membered or six-membered, unsubstituted or substituted, oxyalkylated N-heterocyclic compounds which contain two NH— groups in the molecule, by reaction of mononuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds, for example hydantoin, barbituric acid, uracil, dihydrouracil, parabanic acid and the corresponding derivatives, with alkylene oxide, for example ethylene oxide or propylene oxide, to give monoalcohols or dialcohols, and subsequent glycidylation of the OH— groups or of the OH— and NH— group to give the corresponding glycidyl ethers. The compounds are resin precursors.

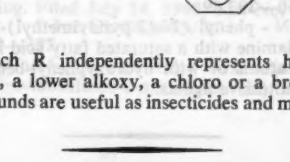
3,629,264

TRICYCLOHEXYLTIN 8-QUINOLINOLATES

Kailash C. Pande, Parkersburg, W. Va., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,690
Int. Cl. C07d *33/44*
U.S. Cl. 260—270 **3 Claims**

Tricyclohexyltin 8-quinolinolates corresponding to the formula:



wherein each R independently represents hydrogen, a lower alkyl, a lower alkoxy, a chloro or a bromo group. The compounds are useful as insecticides and microbicides.

3,629,265

7-HALO-4-ISOQUINOLONES

Guenter Grethe, North Caldwell, Hsi Lin Lee, West Paterson, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 571,406, Aug. 10, 1966. This application Oct. 30, 1969, Ser. No. 872,767
Int. Cl. C07d *35/30, 35/32*
U.S. Cl. 260—287 **3 Claims**

4-isoquinolones bearing a halogen or hydroxy substituent on the phenyl ring are disclosed. The compounds are useful as blood pressure lowering agent and as intermediates for 1,2,3,4-tetrahydroisoquinolines useful as antihypertensive agents.

3,629,266

(PHENYL PIPERIDINO ALKYL)3,4-DIHYDROCARBOSTYRILS

Herbert John Havera, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,950
Int. Cl. C07d 33/52
U.S. Cl. 260—288 2 Claims

1-substituted derivatives of 3,4-dihydrocarbostyril that are useful as analgesic agents. These compounds are prepared by reacting a 3,4-dihydrocarbostyril or substituted 3,4-dihydrocarbostyril with a suitable haloalkylamine.

3,629,267

BENZOHETEROCYCLICALKYL DERIVATIVES OF 4-(2-KETO - 1-BENZIMIDAZOLINYL)-PIPERIDINE, 4-(2-KETO - 1 - BENZIMIDAZOLINYL) - 1,2,3,6 TETRAHYDROPYRIDINE, 1 - PHENYL - 1,3,8-TRIAZASPIRO[4,5]DECAN - 4 - ONE AND 2,4,9-TRIAZASPIRO[5,5]UNDECAN-1,3,5-TRIONE

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Philadelphia, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,320
Int. Cl. C07d 5/10, 6/18
U.S. Cl. 260—294.8 C 7 Claims

Benzoheterocyclicalkyl derivatives of 4-(2-keto-1-benzimidazolinyl) - piperidine, 4-(2-keto-1-benzimidazolinyl)-1,2,3,6 - tetrahydropyridine, 1 - phenyl - 1,3,8-triazaspiro-[4,5]decan-4-one and 2,4,9-triazaspiro[5,5]undecan-1,3,5-trione in which the benzoheterocyclic moiety is thianaphthenyl or benzofuranyl, optionally substituted by chloro, bromo, fluoro, methyl, methoxy or trifluoromethyl, have neuroleptic activity. The compounds are generally prepared from either the benzoheterocyclicalkyl halide by reaction with the appropriate amine or the benzoheterocyclic amine by condensation with a 5,5-bis(β-haloethyl)-barbituric acid.

3,629,268

SALTS OF N-PHENYL-N-(2-PYRIDYLMETHYL)-2-(N-PIPERIDINO)-ETHYLAMINE

Toru Masuda, Nishinomiya, Yoichi Sawa, Suita, Yoshiyuki Kawakami, Nara, and Seiji Miyano, Fukuoka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed July 17, 1969, Ser. No. 842,706
Claims priority, application Japan, July 17, 1968, 43/50,305; Mar. 1, 1969, 44/15,555
Int. Cl. C07d 29/28
U.S. Cl. 260—293.69 6 Claims

Salts of N - phenyl - N-(2-pyridylmethyl)-2-(N-piperidino)-ethylamine with a saturated fatty acid having 14 to 22 carbon atoms or with hydroxyphenyl-benzoylbenzoic acid are antitussive agents.

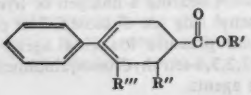
3,629,269

DERIVATIVES OF THE 2-(LOWER ALKYL)-3-(LOWER ALKYL)-4-PHENYL-3- OR 4-CYCLOHEXENECARBOXYLIC ACIDS

George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Filed Sept. 26, 1968, Ser. No. 763,026
Int. Cl. C07c 69/76
U.S. Cl. 260—293.81 7 Claims

Compounds of the general formula



are disclosed wherein R'' and R''' are selected from the group consisting of lower alkyl of up to 3 carbon atoms; and R' is selected from the group consisting of alkyl of from 9 to 20 carbon atoms, alkenyl of up to 20 carbon atoms, monohydroxy lower alkyl, dihydroxy lower alkyl, adamantyl, adamantyl lower alkyl, phenyl, phenyl lower alkyl, diphenyl lower alkyl, cycloalkyl, cycloalkyl lower alkyl, carbo lower alkoxy lower alkyl, lower alkoxy lower alkyl, furyl, furyl lower alkyl, carbo lower alkoxy phenyl, piperidyl, piperidyl lower alkyl, phenyl-cyclohexenylmethyl in which the cyclohexenyl group contains substituents selected from the group consisting of hydrogen and lower alkyl of up to 3 carbon atoms and the dotted lines represent a double bond at either the 3- or the 4-position. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

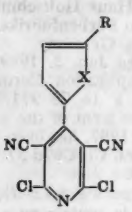
3,629,270

CERTAIN 2,6-DICHLORO-3,5-PYRIDINEDICARBONITRILES

Joachim Gante and Sigmund Lust, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,190
Claims priority, application Germany, Feb. 22, 1969, P 19 08 947.5
Int. Cl. C07d 31/46
U.S. Cl. 260—294.8 F 12 Claims

Compounds of the formula



(I)

wherein X is O, S or NH and R is H, halogen, NO_2, SO_3H, the acyl group of a carboxylic acid containing up to eight carbon atoms or NR_1R_2 in which R_1 and R_2 are H, alkyl containing 1–8 carbon atoms or acyl as defined herein, possess anti-fungal activity and are pest control agents generally.

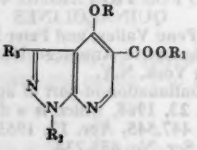
3,629,271

PYRAZOLOPYRIDINE CARBOXYLIC ACID COMPOUNDS AND DERIVATIVES

Hans Hoehn, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed June 16, 1969, Ser. No. 833,673
Int. Cl. C07d 31/36
U.S. Cl. 260—295.5 B 7 Claims

New pyrazolopyridine carboxylic acid compounds and derivatives of the general formula



which are antimicrobial agents and central depressants, as well as intermediates therefor, are the subject of this invention.

3,629,272

PROCESS FOR PRODUCING 6-HALO-4-AZABENZIMIDAZOLES AND INTERMEDIATES THEREFOR

Henry Bader, Newton Centre, and John L. Ferrari, Framingham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed May 1, 1969, Ser. No. 821,113
Int. Cl. C07d 31/42
U.S. Cl. 260—296 H 9 Claims

Halo-substituted-4-azabenzimidazoles are prepared in two steps: (1) by the selective hydrogenation of a 2-amino-3-nitro-5-halopyridine in a solution of a high boiling alkanol using Raney nickel catalyst to yield the corresponding 2,3-diamine and (2) refluxing the alkanol solution of diamine intermediate with formic acid while continuously and simultaneously removing water of condensation.

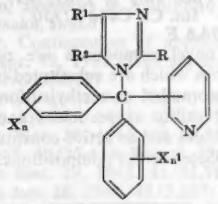
3,629,273

N-DIARYL-PYRIDYL-METHYL-IMIDAZOLES, SALTS THEREOF

Wilfried Draber, Karlheinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 3, 1969, Ser. No. 839,089
Claims priority, application Germany, July 20, 1968, P 17 17 939.6
Int. Cl. C07d 31/42
U.S. Cl. 260—296 R 14 Claims

N-diaryl-pyridyl-methyl-imidazoles of the formula:



(I)

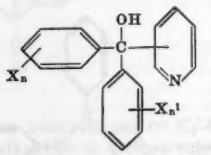
wherein

R, R^1 and R^2 are each hydrogen, straight or branched chain lower alkyl or straight or branched chain lower alkenyl,

X is straight or branched chain alkyl of 1 to 12 carbon atoms, straight or branched chain alkenyl of 1 to 12 carbon atoms or an electronegative moiety, and

n and n^1 are each integers from 0 to 2,

or pharmaceutically acceptable non-toxic salts thereof are produced by reacting diaryl-pyridyl carbinols of the formula:



(II)

wherein X, n and n^1 are as above defined, in an inert organic solvent with a reagent suitable for chlorination of tertiary alcohols and reacting the diaryl-pyridyl-methyl chloride thus produced with an acid-binding agent and imidazole or lower alkyl imidazole. The salts are obtained by reaction of the compounds with the corresponding acid.

These compounds are useful as antimycotics and should generally be administered in the range of about 20 to 100 m./kg.

3,629,274

MEROCYANINE DYES AND PHOTOGRAPHIC MATERIALS PREPARED THEREWITH

Gene L. Oliver. Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application July 22, 1966, Ser. No. 567,070, now Patent No. 3,486,897, dated Dec. 30, 1969. Divided and this application June 11, 1969, Ser. No. 832,415
Int. Cl. C09b 23/10
U.S. Cl. 260—304 11 Claims

Certain merocyanine dyes derived from cyanomethyl sulfones are useful as filter dyes and as spectral sensitizers in light-sensitive photographic silver halide emulsions. 2 - (3 - cyano-3-dodecylsulfonylallylidene)-3-ethylthiazolidine and 2 - (3 - cyano-3-dodecylsulfonylallylidene)-3-(3-sulfopropyl)thiazolidine, potassium salt are illustrative of the new merocyanine dyes.

3,629,275

CARBOXYLIC ACID (1,2,4-THIADIAZOL-5-YL)-AMIDES

Carl Metzger and Dieter Borrmann, Wuppertal-Elberfeld, Richard Wegler, Leverkusen, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 29, 1968, Ser. No. 756,310
U.S. Cl. 260—306.8 4 Claims

[(Alkyl, haloalkyl, alkoxy and phenoxy)-carbonyl]-N-(3-alkyl and phenyl-1,2,4-thiadiazol-5-yl)-amides, i.e. (alkanoyl, haloalkanoyl, carboalkoxy and carbophenoxy)-N-(3-alkyl and phenyl-1,2,4-thiadiazol-5-yl)-amides or (alkanoic, haloalkanoic, monoalkyl carbonic and monophenyl carbonic acid)-N-(3-alkyl and phenyl-1,2,4-thiadiazol-5-yl)-amides, which possess herbicidal properties, and which may be produced by conventional methods.

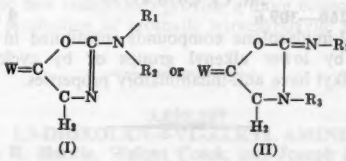
3,629,276

2-AMINO-5-SPIRO-SUBSTITUTED-OXAZO COMPOUNDS

Michael Raymond Harnden, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed July 16, 1969, Ser. No. 842,365
Int. Cl. C07d 85/26
U.S. Cl. 260—307 2 Claims

Novel 2-amino-5-spiro-substituted-2-oxazolines (1) and 2-imino-5-spiro-substituted-2-oxazolines (II) of the formulae



(I) (II)

wherein R_1 and R_2 are hydrogen, loweralkyl, phenyl or phenyl-loweralkyl; R_3 is loweralkyl; and W is a cyclic moiety selected from the group consisting of cycloalkyl, loweralkyl-substituted cycloalkyl, loweralkyl-polysubstituted cycloalkyl wherein said cycloalkyl group has 4 to 8 carbon atoms, piperidinyl, loweralkyl-substituted piperidinyl, decalyl and norbornyl. The compounds are useful as anti-depressant agents.

3,629,277

S-(1H-1,2,4-TRIAZOL-5-YL) DITHIOCARBAMATES

John J. D'Amico, Dunbar, W. Va., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Application Oct. 11, 1967, Ser. No. 705,572, now Patent No. 3,454,572, dated July 8, 1969, which is a division of application Ser. No. 513,558, Dec. 13, 1965, now Patent No. 3,379,700. Divided and this application Oct. 1, 1968, Ser. No. 766,027

Int. Cl. C07d *55/06, 99/02*

U.S. Cl. 260—308 R 5 Claims

S-(1H)-1,2,4-triazol - 5 - yl)dithiocarbamates are described which are useful for accelerating vulcanization of rubber.

3,629,278

PREPARATION OF IMIDAZOLINE COMPOUNDS BY PYROLYSIS OF N,N'-DIACYLALKYLENEDIAMINES

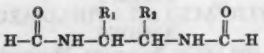
Paul L. Bachman, Parlin, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,305

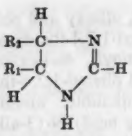
Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 4 Claims

N,N'-diformylalkylenediamines having nitrogen atoms on adjacent carbons of the general formula



are heated in the presence of calcium oxide to form imidazolines of the general formula



where R_1 and R_2 are hydrogen, alkyl or aralkyl. The imidazolines are converted to their corresponding imidazoles by dehydrogenation in the presence of a copper catalyst.

3,629,279

4-ARYL-2-IMIDAZOLONE COMPOUNDS

Enos Charles Pesterfield, Jr., Briarcliff Manor, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 596,813, Nov. 25, 1966. This application Feb. 3, 1969, Ser. No. 796,165

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 9 Claims

4-aryl-2-imidazolone compounds substituted in the 1-position by lower alkenyl groups or by cyclopropyl (lower)alkyl have anti-inflammatory properties.

3,629,280

CYCLIC UREA AMIDE PHOSPHATES USEFUL AS INSECTICIDES

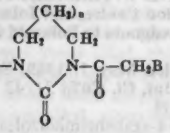
Peter E. Newallis, Overland Park, Kans., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1967, Ser. No. 694,418

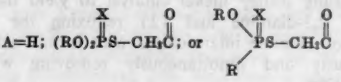
Int. Cl. C07d *49/30*

U.S. Cl. 260—309.7 4 Claims

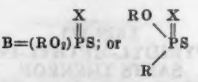
A new class of cyclic urea amide phosphates and phosphonates, utilized as insecticides, and having the following general structure covering the compounds of this invention:



wherein n=0, 1



and



and wherein R=lower alkyl group having 1–5 carbon atoms; X=O or S.

3,629,281

SUBSTITUTED POLYHALO-4-NITROPYRIDINES

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 3, 1969, Ser. No. 839,066

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 F 4 Claims

Disclosed as novel compounds are polyhalo-4-nitropyridine derivatives which are substituted in the 6-position by cyano, trifluoromethyl or methylsulfonyl groups. The compounds have utility as pesticides and are variously effective as herbicides and as active constituents of various fungicidal and bacteriocidal compositions.

3,629,282

3,5-DIOXO - 1,2 - DIPHENYL-4-n-BUTYL-4-POLYOXYETHYLENE PYRAZOLIDINES

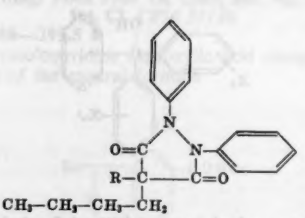
Georges Negrevergne, 1 Rue de Pessac, Bordeaux, France

No Drawing. Original application Dec. 18, 1967, Ser. No. 691,197. Divided and this application May 14, 1969, Ser. No. 856,508

Int. Cl. C07d *49/08*

U.S. Cl. 260—310 B 1 Claim

Diphenylpyrazolidone derivatives, substituted on the 4 position and having the formula:



wherein R is selected from the group consisting of polyoxyethylene having a molecular weight of from 200 through 2000. The compounds are useful in achieving an anti-inflammatory effect.

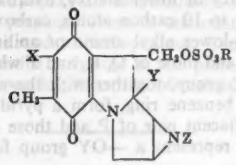
3,629,283

DERIVATIVES OF DECARBAMOYL MITOMYCIN

Keizo Uzu, Kinichi Nakano, and Toshinaka Takahashi, Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaicha, Tokyo-to, Japan

Filed July 8, 1969, Ser. No. 839,920
Claims priority, application Japan, July 24, 1968, 43/51,866
Int. Cl. C07d 27/36
U.S. Cl. 260—326.3 5 Claims

Compounds of the formula



and a process for their preparation are provided wherein X is methoxy or amino, Y is methoxy or hydroxy, Z is methyl or R_1CO, R_1 is lower alkyl and R_2 is lower alkyl or aromatic. These compounds are antibiotics.

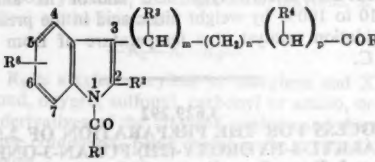
3,629,284

PROCESS FOR THE PREPARATION OF 3-INDOLYL ALIPHATIC ACID DERIVATIVES

Hisao Yamamoto, Nishinomiya-shi, and Masaru Nakao, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation of application Ser. No. 541,967, Apr. 12, 1966. This application June 23, 1969, Ser. No. 838,037
Claims priority, application Japan, Apr. 19, 1965, 40/23,078; Apr. 26, 1965, 40/24,928, 40/24,929, 40/24,930; Nov. 30, 1965, 40/73,856, 40/73,857; Dec. 7, 1965, 40/75,430; Dec. 8, 1965, 40/75,792, 40/75,793; Dec. 29, 1965, 41/81,794, 41/81,795, 41/81,796; Jan. 20, 1966, 41/3,187; Jan. 31, 1966, 41/5,754; Feb. 7, 1966, 41/7,276, 41/7,277
Int. Cl. C07d 27/56
U.S. Cl. 260—326.13 25 Claims

N-acyl 3-indolylaliphatic acid compounds are prepared by (1) reacting a phenylhydrazone compound with an acylating agent to give N^1-acylated phenylhydrazone compound, (2) decomposing the resultant compound with a mineral acid to yield an N^1-acylated phenylhydrazine, (3) and then reacting the resultant product with an aliphatic acid compound. The final products have the formula



wherein R^1 is an unsubstituted or C_1–C_3 alkyl-, C_1–C_3 alkoxy-, C_1–C_3 alkylthio- or halogen-substituted phenyl or naphthyl group, or an unsubstituted or halogen- or C_1–C_2 alkyl-substituted, pyridine, thiophene, furan or piperidine ring, R^2 and R^3 are hydrogen atoms or C_1–C_2 alkyl groups, R^4 is a hydrogen atom or a carboxy or C_1–C_4 alkoxycarbonyl group, R^5 is an alkoxy having 4 or less carbon atoms, benzyloxy, amino or hydroxy group, R^6 is a C_1–C_3 alkoxy, or C_1–C_3 alkylthio or nitro group or a halogen atom at the position of 4, 5 or 6, *m* and *p* are 0 or 1 and *n* is 0 or an integer of from 1 to 3, and are produced in good yields. Typical examples include N-nicotinoyl-2-methyl-5-methoxy-3-indolylacetic acid, γ-[1-Cp - chlorobenzoyl) - 2,5-dimethyl-3-indolyl]-butyric acid and N-(p-methylbenzoyl)-2-methyl-5-methoxy-3-indolylacetic acid, all of which exhibit excellent anti-inflammatory properties with low toxicity on the basis of standard laboratory animal tests.

3,629,285

DERIVATIVES OF 3-HYDROXY-α-(1-AMINOETHYL)-BENZYL ALCOHOL

Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 8, 1967, Ser. No. 636,586
Int. Cl. A61k 27/00; C07c 91/16; C07d 63/12
U.S. Cl. 260—332.3 R 10 Claims

Novel derivatives of 3 - hydroxy - α - (1-aminoethyl)-benzyl alcohol particularly 3-ether derivatives of erythro and threo 3 - hydroxy - α - [1-aminoethyl]-benzyl alcohol and their pure enantiomers are described. Also processes for the preparation of the above identified compounds are shown.

The novel derivatives of 3 - hydroxy - α - (1-aminoethyl)-benzyl alcohol are useful as antihypertensive agents and inhibitors of gastric secretion.

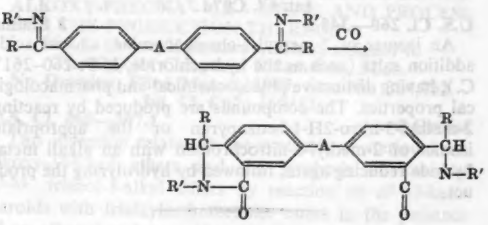
3,629,286

BIS-PHTHALIMIDINES

Jiro Tsuji and Tsunesuke Kajimoto, Kamakura, Kanagawa, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,684
Claims priority, application Japan, Oct. 13, 1967, 42/65,612
Int. Cl. C07d 27/50
U.S. Cl. 260—325 2 Claims

New phthalimidine compounds are described which are produced by reacting a Schiff base with carbon monoxide at 150° C.–300° C. in the presence of a catalytic amount of cobalt carbonyl in accordance with equation:



These new compounds provide a more economic route in the production of aromatic tetracarboxylic acids.

3,629,287

1,3-DIOXOLAN-4-YL-ALKYL AMINES

Waldo R. Hardie, Walnut Creek, and Joseph E. Aaron, Berkeley, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 547,194, May 3, 1966. This application Oct. 1, 1968, Ser. No. 764,316
Int. Cl. C07d 13/04
U.S. Cl. 260—340.9 12 Claims

2-substituted-1,3-dioxolan-4-yl-alkyl amines having tranquilizing activity and useful as intermediates for the production of the corresponding 1,3-dioxolan - 4 - yl - alkyl-

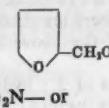
guanidines having anti-hypertensive activity, prepared by the reaction of the corresponding 1,3-dioxolan-4-yl-lower-alkyl halide with a metallo salt of phthalimide followed by hydrolysis.

3,629,288
PURIFICATION OF APROTIC SOLVENTS
Jaroslav Vit, New York, N.Y., assignor to National Patent Development Corporation, New York, N.Y.
No Drawing. Filed Nov. 6, 1969, Ser. No. 874,711
Int. Cl. C07d *7/04, 5/04*
U.S. Cl. 260—345.1 **10 Claims**

Aprotic solvents are purified by being treated with a compound of the formula:

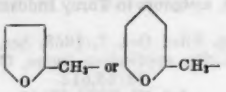
$$MAlH(OR)_3 \text{ or } MAlH_2(OR)_2$$

wherein M is Na and R is $R'O(CH_2)_2$—, $R'O(CH_2)_3$—, or $R'O(CH_2)_4$—, in which R′ is CH_3—, C_2H_5— or $A(CH_2)_n$—; *n* being 2, 3 or 4 and A being CH_3O—, C_2H_5O—,



$(CH_3)_2N$—, $(C_2H_5)_2N$— or

or R is $R''_2N(CH_2)_2$—, $R''_2N(CH_2)_3$— or $R''_2N(CH_2)_4$— in which R″ is CH_3— or C_2H_5; or R is

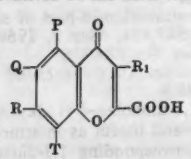


3,629,289
CHROMANAMINES
Ian Moyle Lockhart, Egham, Surrey, England, assignor to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed Apr. 24, 1969, Ser. No. 819,102
Int. Cl. C07d *7/20*
U.S. Cl. 260—345.2 **3 Claims**

An isomer of 2-methyl-3-chromanamine, and its acid-addition salts (such as the hydrochloride, M.P. 260–261° C.), having distinctive physicochemical and pharmacological properties. The compounds are produced by reacting 2-methyl-3-nitro-2H-1-benzopyran or the appropriate isomer of 2-methyl-3-nitrochroman with an alkali metal hydride reducing agent, followed by hydrolyzing the product.

3,629,290
DERIVATIVES OF CHROMONE-2-CARBOXYLIC ACID
Hugh Cairns, Sandbach, Richard Hazard, Knutsford, and John King, Loughborough, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England
No Drawing. Filed Oct. 14, 1968, Ser. No. 767,470
Claims priority, application Great Britain, Oct. 17, 1967, 47,211/67
Int. Cl. C07d *7/34*
U.S. Cl. 260—345.2 **14 Claims**

Chromone derivatives of the formula



in which at least one of Q, R or T represents —OY wherein Y is selected from the group consisting of hydroxy-alkyl, alkoxy-alkyl, carboxyl-alkyl, dihydroxyalkyl, alkoxy-alkoxy-alkyl, alkoxy-hydroxy-alkyl, phenoxy-alkyl, furfuryl, tetrahydrofurfural, dioxolanyl, alkyl substituted dioxolanyl, glucosyl and ribosyl in which groups the alkyl and alkoxy portions are lower alkyl or lower alkoxy, P and those of Q, R and T which do not form a —OY group are selected from hydrogen, halogen, alkyl containing from 1 to 10 carbon atoms, alkyl containing from 1 to 10 carbon atoms and substituted by halogen, hydroxy or lower alkoxy; hydroxy, alkoxy containing from 1 to 10 carbon atoms, carboxy, nitro, lower alkylamino, di-lower alkyl amino or anilino, or an adjacent pair of P and those of Q, R, and T which do not represent a —OY group, together with the adjacent carbon atoms on the benzene ring, form a pyridine or benzene ring, or an adjacent pair of P and those of Q, R and T which do not represent a —OY group form the chains

$-(CH_2)_4-$,
$-(CH_2)_3-$,
$-O(CH_2)_3-$,
$-O(CH_2)_2-$,
$-O(CH_2)_2O-$,
$-CH_2-CH(CH_3)-O-$,
$-CH=CH-O-$,
$-CH=C(CH_3)-O-$,
$-OCH_2O-$,
$-NH-C(R^4R^5)-CH_2-O-$,
$-NR^5(CH)_2-O-$ or
$-NR^4(CH)_2-NR^4-$

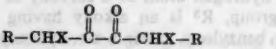
wherein R^4 is hydrogen or a lower alkyl or a lower alkoxy group and R^5 is hydrogen, or R^4 and R^5 together form an =O group, R_1 is selected from the hydrogen, alkyl, aryl and alkoxy containing from 1 to 10 carbon atoms, and pharmaceutically acceptable derivatives thereof, are valuable in the treatment of diseases due to antigen reactions such as asthma.

3,629,291
CYCLOHEXANE-1,2,3,4,5-PENTACARBOXYLIC ACID AND ITS DIANHYDRIDE
Heinz Nohe, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed June 18, 1969, Ser. No. 834,490
Claims priority, application Germany, June 25, 1968, P 17 68 744.4
Int. Cl. C07c *61/08;* **C07d** *5/32*
U.S. Cl. 260—346.3 **3 Claims**

Cyclohexane-1,2,3,4,5-pentacarboxylic acid and its dianhydride are obtained by oxidation of bicyclo-[2,2,2]-oct-7-ene-2,3,5-tricarboxylic acid and/or its anhydride with 10 to 100% by weight nitric acid in the presence of an oxidation catalyst at a temperature of from 30° to 300° C.

3,629,292
PROCESS FOR THE PREPARATION OF 2,5-DI-ALKYL-4-HYDROXY-(2H)-FURAN-3-ONES
William J. Evers, Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,275
Int. Cl. C07d *5/16*
U.S. Cl. 260—347.8 **12 Claims**

Processes for the preparation of dialkylhydroxyfuran-3-ones which comprise reacting dihalodiketones having the structure



wherein each X is a halogen atom and R is lower alkyl, with aqueous alkali at 75° to 125° C.

3,629,293
SYNTHESIS OF 5-METHYL-4-HYDROXY-2,3-DIHYDROFURAN-3-ONE

Hendricus Gerardus Peer and Godefridus Antonius Maria van den Ouweland, Zevenaar, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Sept. 17, 1968, Ser. No. 760,351
Claims priority, application Netherlands, Sept. 18, 1967, 6712748
Int. Cl. C07d *5/10*
U.S. Cl. 260—347.8 7 Claims

This invention provides a process for the preparation of 5-methyl-4-hydroxy-2,3-dihydrofuran-3-one from a glycosylamine prepared from a secondary aliphatic or aromatic amine and an aldopentose. The N.N-disubstituted glycosylamine is heated in the presence of a polar solvent and a specific proportion of carboxylic acid.

3,629,294
EPOXIDATION PROCESS

Jui-Yuan Sun, Riverdale, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,947
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 V 8 Claims

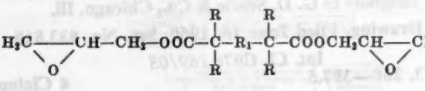
A process for the liquid phase epoxidation of olefinic compounds to their corresponding epoxides which comprises reacting an olefinic compound with molecular oxygen in the presence of catalytic amounts of a copper compound and molybdenum under mild conditions to produce substantial yields of the corresponding epoxide and substantial yields of highly reactive and valuable corresponding co-products of alcohols and ketones.

3,629,295
GLYCIDYL ESTERS OF STERICALLY HINDERED ORGANIC ACIDS

Robert W. Stackman, Morristown, and Anthony B. Conciatori, Chatham, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed May 8, 1969, Ser. No. 823,139
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 A 6 Claims

Glycidyl esters of the formula:



wherein R is selected from the group consisting of alkyl, halogen and aryl and R_1 is a single bond, alkylene, arylene or a radical of the formula:

$$—R_2—X—R_2—$$

wherein R_2 is alkylene, arylene or diarylene and X is a single bond, oxygen, sulfonyl, carbonyl or amino, or substituted derivatives of the alkylene, arylene and diarylene groups, the compounds being useful in the preparation of epoxy resins.

3,629,296
BIS(AZIDOPHOSPHORANES)

Roger A. Baldwin, La Mirada, and Ming T. Cheng, Buena Park, Calif., assignors to Kerr McGee Chemical Corp.

No Drawing. Original application Nov. 15, 1965, Ser. No. 507,699. Divided and this application Nov. 12, 1968, Ser. No. 793,630
Int. Cl. C07c *117/00;* C09d *5/18*
U.S. Cl. 260—349 6 Claims

New class of high molecular weight phosphorus and nitrogen-containing compounds having two or more phosphorane linkages per molecule. These compounds are intermediates to fire-retardant polymer phosphoranes.

3,629,297
SOLVENT-FREE LIQUID ORGANOSILICON RESINS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,032
Int. Cl. C08g *51/04, 31/02*
U.S. Cl. 260—37 SB 9 Claims

A liquid resin consisting essentially of 55–80 mol percent of $CH_3SiO_{3/2}$ units, 10 to 30 mol percent of units selected from the group consisting of $CH_2=CHSiO_{3/2}$ and $CH_2=CH(CH_3)SiO$ and 10–35 mol percent of units selected from the groups consisting of $(C_6H_5)_2SiO$,

$$C_6H_5(CH_3)SiO \text{ and } (CH_3)_2SiO$$

and having a silicon-bonded alkoxy content of from 5–20 weight percent, the alkoxy substituents having from 1 to 3 inclusive carbon atoms, are utilized as binders for ceramic formulations.

3,629,298
STEROIDAL 3-KETO-$\Delta^{1,4}$-DIENE-3-ENAMINES

Verlan H. Van Rheenen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 643,825, June 6, 1967. This application Feb. 24, 1969, Ser. No. 801,859
Int. Cl. C07c *169/24*
U.S. Cl. 260—397.1 6 Claims

This invention relates to the synthesis of steroidal 3-keto-$\Delta^{1,4}$-diene 3-enamines using titanium tetarachloride as an assistant to the reaction.

3,629,299
1α,3-DI LOWER ALKOXY - 21 - CARLIO-LOWER ALKOXY-PREGNA - 3,5 - DIENE AND PROCESS FOR THE PRODUCTION THEREOF

Joel E. Huber, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,702
Int. Cl. C07c *169/52*
U.S. Cl. 260—397.1 6 Claims

This invention relates to the synthesis of steriodal 1α-alkoxy-$\Delta^{3,5}$-3-ol ethers and the synthesis of steroidal $\Delta^{1,3,5}$ trienol-3-alkyl ethers by reaction of $\Delta^{1,4}$-3-keto-steroids with trialkylorthoformate esters in the presence of an alkanol and an acid catalyst.

3,629,300
FUSIDO STEROL AND THE C–3 ACYLATES THEREOF

Wagn Ole Godtfredsen, Vaerlose, Denmark, assignor to Løvens Kemiske Fabrik Produktonsaktieselskab, Ballerup, Denmark

No Drawing. Filed Sept. 2, 1969, Ser. No. 854,795
Claims priority, application Great Britain, Sept. 6, 1968, 42,645/68
Int. Cl. C07c *169/48*
U.S. Cl. 260—397.2 2 Claims

The invention relates to a new triterpene, fusidosterol, of hypocholesterolemic effect, to esters thereof with mono- and dibasic lower aliphatic carboxylic acids, and to a method of obtaining the triterpene from the mycelium of fusidinic acid-producing fungi.

3,629,301

3,3-DIFLUORO-2-SUBSTITUTED STEROIDS AND THEIR PREPARATION

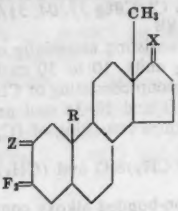
William C. Ripka, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,352

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.3 10 Claims

New steroids of the formula



wherein Z is oxygen or

R is hydrogen or methyl; and X is oxygen or

where R^1 is hydrogen, methyl or ethynyl, and R^2 is hydrogen or an alkanoyl of no more than 8 carbon atoms can be made in two steps from 3-fluoro-Δ^2-steroids. These hormone-active 3,3-difluoro steroids primarily have antiandrogenic activity, although some exhibit androgenic properties.

3,629,302

6-CHLORO-20-SUBSTITUTED-PREGNANES

Andor Fürst, Basel, and Marcel Muller, Frenkendorf, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

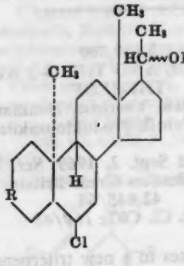
No Drawing. Filed May 14, 1969, Ser. No. 824,694

Claims priority, application Switzerland, May 20, 1968, 7,484/68

Int. Cl. C07c *169/30*

U.S. Cl. 260—397.4 14 Claims

6-halo compounds of the formula



wherein R is a 3-keto-Δ^4-, a 3-keto-$\Delta^{4,6}$-, a 3-keto-$\Delta^{1,4}$-, a 3-keto-$\Delta^{1,4,6}$-, a 3-alkoxy-$\Delta^{3,5}$-, a 3-alkoxy-$\Delta^{4,6}$-, a 3-acyloxy-$\Delta^{3,5}$-, a 3-acyloxy-$\Delta^{4,6}$-, a 3-acyloxy-$\Delta^{2,4,6}$- or a 3-hydroxy-$\Delta^{4,6}$-system; and R^1 is hydrogen or acyl. These compounds are useful as progestational agents.

3,629,303

6-ALKOXY - 16 - ALKYLIDENE - 17α - LOWER ALKANOYLOXY-21-DESOXY - 4,6 - PREGNADIENES, METHODS FOR THEIR MANUFACTURE AND INTERMEDIATES PRODUCED THEREBY

Richard Rausser, Union, and Robert Tiberi, Englishtown, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed June 9, 1969, Ser. No. 831,739

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.4 26 Claims

6 - alkoxy-16-lower alkylidene-17α-lower alkanoyloxy-4,6 - pregnadiene - 3,20-diones and 1α,2α-cyclomethylene derivatives thereof having progestational and anti-androgenic activity are prepared by treating a 6-keto-16-lower alkylidene - 17α-lower alkanolyoxy-4-pregnane-3,20-dione with boron trifluoride is a lower alkanol.

Preferred compounds are 6-methoxy-16-lower alkylidene - 17α-lower alkanoyloxy-4,6-pregnadiene-3,20-diones (particularly 6-methoxy-16 - methylene-17α-acetoxy-4,6-pregnadiene-3,20-dione) and their 1α,2α-cyclomethylene derivatives, which are valuable in the treatment of benign prostatic hypertrophy. These 6-methoxy compounds are also prepared by reaction of a 16-lower alkylidene-17α-lower alkanoyloxy-4-pregnene-3,20-dione or a 3-enol ether or 3-enol ester derivative thereof with a cupric halide in methanol.

The 1α,2α - cyclomethylene-6-alkoxy-16-lower alkylidene - 17α-lower alkanoyloxy-4,6-pregnadiene-3,20-diones are also prepared from a 6-alkoxy-16-lower alkylidene-17α-lower alkanoyloxy-1,4,6-pregnatriene-3,20-dione by reaction with dimethylsulfoxonium methylide.

3,629,304

17α-ALKYNYL - 11β,13β - DIALKYLGONA-1,3,5(10)-TRIENE - 3,17β-DIOL 3-CYCLOALKYL ETHERS, COMPOSITIONS AND METHOD

John S. Baran, Morton Grove, and Ivar Laos, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed June 16, 1969, Ser. No. 833,810

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.5 4 Claims

3 - hydroxy - 11β,13β - dialkylgona - 1,3,5(10) - trien-17-ones are allowed to react with a cycloalkyl halide and the resulting 3-cycloalkyl ethers are contacted with a lower alkyne to afford the resulting 17α-alkynyl-11β,13β-dialkylgona - 1,3,5(10) - triene - 3,17β - diol 3-cycloalkyl ethers, which compounds are potent estrogens.

3,629,305

STABILIZED COMPOSITIONS OF ALKALINE METAL SALTS OF ESTROGEN SULPHATES

Luigi Bernardi and Ugo Pallini, Milan, Italy, assignors to Società Farmaceutici Italia, Milan, Italy

No Drawing. Filed July 23, 1969, Ser. No. 844,155

Claims priority, application Italy, July 24, 1968, 19,351/68

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.4 13 Claims

A process for the preparation of a stable composition of alkaline salt of synthetic estrogen sulphate. An alkaline

salt of a synthetic estrogen sulphate selected from the group consisting of estrone sulphate and equiline sulphate, is mixed with an aminoacid selected from the group consisting of glycine, L-lysine, L-arginine, L-ornithine and their salts.

3,629,306

PROCESS FOR THE PREPARATION OF B-FORM MICROCRYSTALLINE CHLORAMPHENICOL PALMITATE

Shigeo Kawamura, Saitama, and Takayoshi Hirano, Shuichi Takamura and Masahiko Okazaki, Tokyo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

No Drawing. Filed July 24, 1969, Ser. No. 844,667
Claims priority, application Japan, July 24, 1968, 43/52,367
Int. Cl. C07c *103/40;* **A61k** *21/00*
U.S. Cl. 260—404.5 **8 Claims**

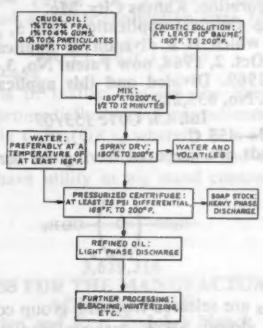
Process for the preparation of B-form microcrystalline chloramphenicol palmitate which is easily absorbed from the intestinal tract and is suitable for making the palmitate suspension, characterized by adding chloramphenicol palmitate and an ionic surface active agent to water or an aqueous sugar solution, heating and stirring the mixture to form an emulsion, and then adding an inorganic salt to the emulsion.

3,629,307

REFINING PROCESS FOR CRUDE GLYCERIDE OIL

Morris Anthony Marino, Westchester, Frederic John Birkhaug, La Grange, and George Edward Sadek, Oak Lawn, Ill., assignors to CPC International Inc.

Filed May 29, 1969, Ser. No. 828,926
Int. Cl. C11b *3/06*
U.S. Cl. 260—425 **11 Claims**


CRUDE OIL: 1% TO 7% FFA, 1% TO 4% GUMS, 0.5% TO 1% PARTICULATES 150°F. TO 200°F.
CAUSTIC SOLUTION: AT LEAST 10° BAUME' 150°F. TO 200°F.
MIX: 150°F. TO 200°F. 1/2 TO 12 MINUTES
WATER: PREFERABLY AT A TEMPERATURE OF AT LEAST 165°F.
SPRAY DRY: 150°F. TO 200°F.
WATER AND VOLATILES
PRESSURIZED CENTRIFUGE: AT LEAST 25 PSI DIFFERENTIAL 165°F. TO 200°F.
SOAP STOCK: HEAVY PHASE DISCHARGE
REFINED OIL: LIGHT PHASE DISCHARGE
FURTHER PROCESSING: BLEACHING, WINTERIZING, ETC.

Covers an improved process for refining a crude glyceride oil containing free fatty acid impurities which comprises: mixing the crude oil with an aqueous sodium hydroxide solution to form an oil-water mixture; allowing the mixture to react until the free fatty acid impurities are converted into a soap stock, to form an oil-water-soap stock composition; dehydrating the composition to provide a dehydrated oil-soap stock mixture; rehydrating the mixture in a pressurized centrifuge and centrifugally separating the soap stock (foots) from the refined oil. The process permits the single step refining of a crude glyceride oil, without the need for a separate degumming step.

3,629,308

SILOXANE-OXYALKYLENE BLOCK COPOLYMERS

Donald L. Bailey, Sistersville, W. Va., and Anton S. Pater, Williamsville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application July 25, 1966, Ser. No. 567,376, now Patent No. 3,507,815, dated Apr. 21, 1970, which is a division of application Ser. No. 431,194, Feb. 8, 1965, the later application is a continuation-in-part of application Ser. No. 116,265, June 21, 1961. Divided and this application Sept. 2, 1969, Ser. No. 854,766
Int. Cl. C07f *7/02;* **C08c** *9/08*
U.S. Cl. 260—448.2 **1 Claim**

This invention relates to novel hydrolytically stable siloxane-oxyalkylene block copolymers characterized by a hydroxy end-blocking group on each oxyalkylene block. These block copolymers form exceptionally stable premixtures with the polyethers and blowing agents conventionally employed in producing polyurethane foams.

3,629,309

ORGANOSILICON COMPOUNDS AND PROCESSES FOR PRODUCING THE SAME

Donald L. Bailey, Sistersville, W. Va., and Victor B Jex, Scarsdale, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 615,492, Oct. 12, 1956. This application Nov. 13, 1969, Ser. No. 876,567
Int. Cl. C07b *7/08, 7/10;* **C07h** *7/18*
U.S. Cl. 260—448.2 B **12 Claims**

Homopolymers of the formula

$$XOC(CH_2)_2\overset{R'}{\underset{|}{Si}}O\frac{3-b}{2}$$

and copolymers containing the additional unit

$$R''_dSiO\frac{4-d}{2}$$

useful to combine with alkyl resins to make heat resistant coatings for glass cloth, aluminum and sheet steel, where X is Cl, ZHN, or MO; Z is R', NH_2 substituted monovalent hydrocarbon, or COOH substituted monovalent hydrocarbon; M is alkali metal, and R' is monovalent hydrocarbon radical, are disclosed.

3,629,310

ORGANO-SILOXANE-OXYALKYLENE BLOCK COPOLYMERS

Donald L. Bailey, Sistersville, W. Va., and Francis M. O'Connor, Akron, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 162,980, Dec. 28, 1961, which is a continuation-in-part of applications Ser. No. 660,997, May 23, 1957, and Ser. No. 661,009, May 23, 1957. Ser. No. 660,997 is a continuation-in-part of application Ser. No. 417,935, Mar. 22, 1954, and Ser. No. 661,009 is a continuation-in-part of application Ser. No. 435,938, June 10, 1959. This application Aug. 28, 1969, Ser. No. 853,931
Int. Cl. C07f *7/04, 7/18*
U.S. Cl. 260—448.8 R **8 Claims**

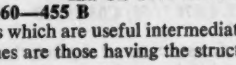
Organosiloxane-oxyalkylene block copolymers where the siloxane blocks are composed of difunctional and/or trifunctional Si atoms and the oxyalkylene blocks contain at least five oxyalkylene units and are derived from a triol are disclosed. The copolymers are useful as mold release agents, hydraulic fluids, lubricants, emulsifier, and surfactants.

3,629,311
AMINO THIOCARBONATE ADDUCTS AND METHOD OF MAKING SAME

John E. Anderson, Clyde E. Parish, and George H. Ross, Houston, Tex., assignors to The Signal Companies, Inc., Los Angeles, Calif.

No Drawing. Original application May 12, 1964, Ser. No. 366,892, now Patent No. 3,384 555, dated May 21, 1968. Divided and this application Feb. 27, 1968, Ser. No. 765,710
The portion of the term of the patent subsequent to Mar. 24, 1987, has been disclaimed
Int. Cl. C07c *154/00*
U.S. Cl. 260—455 B 2 Claims

Adducts which are useful intermediate in the preparation of urethanes are those having the structural formula



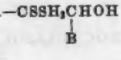
where R''' is hydrogen or an alkyl, cycloalkyl or benzyl radical, R' and R'' are each alkyl, cycloalkyl or benzyl radicals, and R is an aliphatic or cycloaliphatic radical.

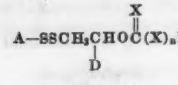
3,629,312
CARBONATES AND THIO CARBONATES OF POLYHALODISULFIDE ALCOHOLS

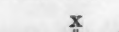
Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, New York, N.Y.

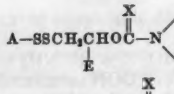
No Drawing. Application Sept. 4, 1968, Ser. No. 757,487, which is a continuation-in-part of application Ser. No. 560,125, June 24, 1966. Divided and this application Mar. 27, 1969, Ser. No. 811,234
Int. Cl. C07c *154/00, 69/00;* A01n *9/12*
U.S. Cl. 260—455 B 14 Claims

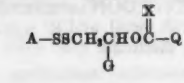
Compounds are prepared having one of the formulae

(1) 

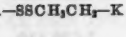
(2) 

(3) 

(4) 

(5) 

and

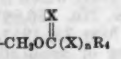
(6) 

where:

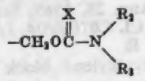
A is selected from the group consisting of di to tetrahaloethyl and di to trihalovinyl;

B is selected from the group consisting of hydrogen and $-CH_2OH$;

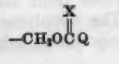
D is selected from the group consisting of hydrogen and



E is selected from the group consisting of hydrogen and



G is selected from the group consisting of hydrogen and



n is 0 or 1,

X is selected from the group consisting of oxygen and sulfur except that when *n* is 0 in Formula 2 X must be oxygen;

Q is halogen;

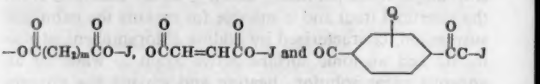
R_1 is selected from the group consisting of alkyl, phenyl, lower alkyl phenyl, halo lower alkyl, halophenyl, naphyl, lower alkyl naphthyl and lower alkyl halophenyl;

R_2 and R_3 individually are the same as R_1 or hydrogen with the proviso that not more than one of R_2 and R_3 is hydrogen and collectively together with the adjacent nitrogen atom form a 5 to 6 membered heterocyclic ring having up to 1 oxygen atom therein;

R_4 is R_1 or

or phenyl ethylene or halophenoxymethyl having up to 3 halogens and up to 1 methyl group on the aromatic ring;

K is selected from the group consisting of



J is selected from the group consisting of hydrogen and $ASSCH_2CH_2-$;

m is an integer from 0 to 2 inclusive, and all halogen atoms in the compounds have an atomic weight of 35 to 80.

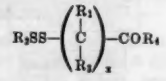
The compounds are useful as herbicides, fungicides, nematocides, defoliants and desiccants. 1,2,2-trichloroethyldithioethyl-2'-methyl-4'-chlorophenoxy acetate is a particularly effective herbicide.

3,629,313
SULFUR CONTAINING CARBOXYLIC ACID THIOESTERS AS PESTICIDES

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, Kansas City, Mo.

No Drawing. Original application Feb. 5, 1969, Ser. No. 841,162, which is a division of application Ser. No. 401,253, Oct. 2, 1964, now Patent No. 3,442,941, dated May 6, 1969. Divided and this application June 20, 1969, Ser. No. 835,229
Int. Cl. C07c *153/07*
U.S. Cl. 260—455 C 7 Claims

Compounds are prepared having the formula



where

R_1 and R_3 are selected from the group consisting of hydrogen, lower alkyl, carboxyl lower alkyl, carbocyclic aryl, carbocyclic haloaryl, haloalkyl, and ester of carboxy lower alkyl;

R_2 is selected from the group consisting of polyhaloethyl and polyhalovinyl;

R_4 is selected from the group consisting of OH, SH, OR_5 where R_5 is selected from the group consisting of alkyl, carbocyclic aryl, halocarbocyclic aryl, haloalkyl, and alkylthioalkyl, SR_5,

where R_6 and R_7 are selected from the group hydrogen, alkyl and carbocyclic alkyl and R_6 and R_7 together with N complete a heterocyclic ring, and OMe

where Me is selected from the group consisting of the metals of Groups I, II, VI, VII and VIII of the Periodic Table; and x is an integer from 1 to 2 inclusive. Such materials have been found useful to kill nematodes, fungi and undesirable plants. They are also useful as defoliating agents.

3,629,314

CHLOROFORMATE AND CARBONATE DERIVATIVES OF SUBSTITUTED AND UNSUBSTITUTED 1 - PHENYL - 2,2 - DIALKYL-1,3-DIHYDROXYPROPANES

Kurt Kulka, New York, N.Y., assignor to Fritzsche Dodge & Scott Inc., New York, N.Y.

No Drawing. Original application Jan. 4, 1965, Ser. No. 423,327, now Patent No. 3,415,844, dated Dec. 10, 1968. Divided and this application Sept. 23, 1968, Ser. No. 761,875

Int. Cl. C07c *69/00, 69/64;* **A61k** *27/00*

U.S. Cl. 260—463 **4 Claims**

Monochloroformate, monochloroformate - carboxylic acid monoester and monocarbonate-carboxylic acid monoester derivatives of substituted and unsubstituted 1-phenyl-2,2-dialkyl-1,3-dihydroxypropanes are produced. Such monocarbamates manifest tranquilizing effects in animals. When administered to animals they produce narcosis that emphasizes relaxation. The monocarbamates may be primary or secondary monocarbamates or mixtures of them, depending upon the method employed to produce them.

3,629,315

ADDUCTS OF TETRABROMODIALKOXY CYCLOPENTADIENES AND ACRYLONITRILE

Richard Garth Pews, Midland, Clare R. Hand, Sanford, and Carleton W. Roberts, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Apr. 12, 1968, Ser. No. 721,106, now Patent No. 3,489,814, dated Jan. 13, 1970. Divided and this application June 16, 1969, Ser. No. 833,679

Int. Cl. C07c *121/48*

U.S. Cl. 260—464 **1 Claim**

Compositions of matter that are the Diels-Alder adducts of tetrabromodialkoxy cyclopentadienes having the general formula $C_5Br_4(OR)_2$ wherein R is an alkyl radical having from 1 to 8 carbon atoms and acrylonitrile. Said adducts have utility in pig weed control agents.

3,629,316

PROCESS FOR THE MANUFACTURE OF ADIPONITRILE

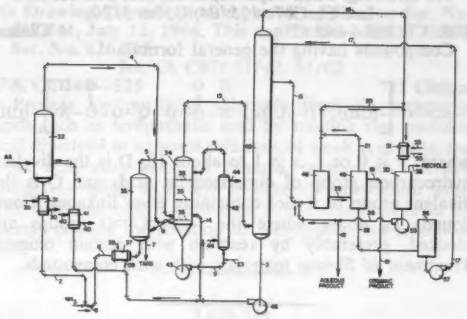
Jimmy L. Hatten and Kurt Rudolph Nauck, Jr., Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Jan. 22, 1969, Ser. No. 793,044

Int. Cl. C07c *121/10*

U.S. Cl. 260—465.2 **12 Claims**

Continuous process for the production of adiponitrile comprising reacting a mixture of adipic acid and an excess of ammonia in a first stage reactor at a temperature of about 320° to 420° F. in the absence of catalyst, passing the resulting mixture to a perforated tray reactor maintained at a temperature of about 475° to 600° F., in the presence of a dehydration catalyst to form a mixture containing adiponitrile, intermediates, water, ammonia and tars, passing a portion of the mixture from the tray reactor to a purge reactor where it is purged with ammonia at a temperature of about 425° to 525° F. to remove tars with adiponitrile and intermediates being returned to the tray reactor; passing the mixture from the tray reactor to a purification column for removal of adiponitrile product, contacting the product with ammonia and water to convert all adipimide to adipamide,



separating the latter from the adiponitrile, recovering the adiponitrile and recycling intermediates, water and ammonia to the system.

3,629,317

PROCESS FOR MANUFACTURING ACRYLONITRILE FROM PROPYLENE

Keisho Yamada, Shigeki Nagai, Kyoji Odan, and Mikio Hidaka, Ube-shi, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,192

Claims priority, application Japan, Sept. 17, 1968, 43/66,626

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **1 Claim**

In the process of manufacturing acrylonitrile wherein propylene, ammonia and oxygen are contacted with a solid oxidizing catalyst in the vapor phase at a temperature in the range of 400–600° C., the improved method which comprises using as said solid catalyst that which consists essentially of

(A) a bismuth antimonate in which the atomic ratio of bismuth to antimony is 1:1,
(B) stannic oxide, and
(C) a bismuth molybdate in which the atomic ratio of bismuth to molybdenum is 2:3;

the weight ratio of said bismuth antimonate to said stannic oxide being in the range of 95:5–60:40, the weight ratio of bismuth antimonate plus stannic oxide to bismuth molybdate being in the range of 95:5–60:40.

3,629,318

SYNTHESIS OF DIAMINOMALEONITRILE FROM HYDROGEN CYANIDE AS CATALYZED BY CYANOGEN OR DIIMINOSUCCINONITRILE

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 707,459, Feb. 23, 1968, now Patent No. 3,564,039, which is a continuation-in-part of application Ser. No. 670,763, Sept. 26, 1967. This application Mar. 18, 1970, Ser. No. 20,821

Int. Cl. C07c *121/20*

U.S. Cl. 260—465.5 **10 Claims**

Base-catalyzed tetramerization of hydrogen cyanide to diaminomaleonitrile achieved by catalyzing the same with a basic catalyst and a cocatalyst, cyanogen and/or diiminosuccinonitrile.

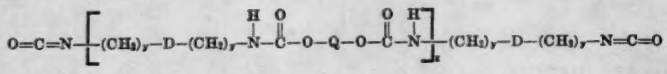
3,629,319

URETHANE DIISOCYANATES

Charles W. Jonaitis, New Hope, and Lyle E. Elmquist, North St. Paul, Minn., assignors to General Mills, Inc.

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,196
Int. Cl. C07c *125/04;* C10m *3/20*
U.S. Cl. 260—468 C 4 Claims

Compounds having the general formula



where y is 0 or 1, x is 1 to about 10, D is the divalent hydrocarbon group of dimerized fat acids and Q is the divalent group of a diol containing ether linkages. Compounds as above where the —N=C=O groups are blocked, preferably by reaction with certain oximes. Treatment of fibrous materials with such compounds.

3,629,320

2-(4-HALO- AND 4-TRIFLUOROMETHYLPHENYLSULFONAMIDO)PHENYLACETIC ACIDS AND ESTERS THEREOF

Jan W. F. Wasley, Ossining, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,798
Int. Cl. C07c *143/78*
U.S. Cl. 260—470 19 Claims

2-(4-halo- and 4-trifluoromethylphenylsulfonamido) phenylacetic acids and the (lower)alkyl esters thereof are anti-inflammatory agents. A typical embodiment is 2-(4-chlorophenylsulfonamido)phenylacetic acid.

3,629,321

INTEGRATION OF PARA-XYLENE OXIDATION TO TEREPHTHALIC ACID AND ITS ESTERIFICATION TO DIMETHYL TEREPHTHALATE

George M. Longland, Jr., Highland, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed May 26, 1969, Ser. No. 827,648
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 R 2 Claims

Liquid phase oxidation of p-xylene with molecular oxygen-containing gas (e.g., air or commercial oxygen) in presence of acetic acid produces fluid oxidation effluent which is subjected first to simultaneous terephthalic acid crystallization and acetic acid displacement by contact with a countercurrent flow of water and second to simultaneous water displacement by and terephthalic slurry formation in methanol by its countercurrent contact with the first formed slurry of terephthalic acid in water from acetic acid displacement. This provides a slurry of terephthalic acid in methanol as feed to esterification from which a liquid esterification effluent is subjected to simultaneous DMT crystallization and methanol mother liquor displacement by countercurrent contact with cooler fresh methanol thereby producing a slurry of precipitated DMT in fresh methanol.

3,629,322

ORGANIC ESTERS AND THEIR USE AS ULTRAVIOLET LIGHT ABSORBERS AND AS HEAT STABILIZERS

Stanley J. Buckman, Kenneth J. Flanagan, John D. Pera, and Lester A. Wienert, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Feb. 17, 1969, Ser. No. 800,007
Int. Cl. C07c *69/78;* C08f *45/58*
U.S. Cl. 260—476 C 3 Claims

Betabenzoyloxy-2'-hydroxychalcones which are useful as ultraviolet light absorbers and heat stabilizers are produced by slowly adding benzoyl chloride to a solution comprising an alkali-metal hydroxide, a 1-(o-hydroxyphenyl)-3-phenyl-1,3-propanedione or a halo substituted compound thereof, and dimethylformamide at a temperature varying from room to about 30° C. Upon completion of the reaction, the mixture is poured into ice water to obtain the chalcone as a colorless solid.

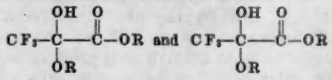
3,629,323

ALKYL ESTERS OF 2-HYDROXY-2-ALKOXY 3,3,3-TRIFLUOROPROPANOIC ACID

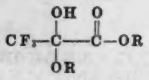
Stanley Selman, Wilmington, Del., and Edward N. Squire, Glen Mills, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Mar. 12, 1968, Ser. No. 724,308, now Patent No. 3,502,732, dated Mar. 24, 1970, which is a division of application Ser. No. 488,247, Sept. 17, 1965. Divided and this application Apr. 23, 1969, Ser. No. 840,880
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R 2 Claims

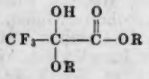
Compounds of the formulas



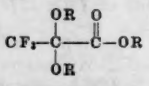
wherein R is alkyl containing up to 30 carbon atoms, can be prepared by reacting perfluoropyruvyl fluoride with a saturated hydrocarbon alcohol and an HF scavenger to neutralize HF and isolating



then reacting the



with an alkali metal alkoxide and a dialkyl sulfate containing up to 30 carbon atoms and isolating



3,629,324

PERFLUORO ALIPHATIC ESTERS

Milton B. Frankel, Tarzana, and Naomi N. Ogimachi, Canoga Park, Calif., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed May 8, 1969, Ser. No. 826,056
Int. Cl. C07c *69/34*
U.S. Cl. 260—485 F 3 Claims

Esters produced by the condensation of 2,2-dinitro-2-fluoroethanol with perfluoro aliphatic dibasic acids in the presence of an inert organic solvent and an acid catalyst. The novel group of esters prepared by the above reaction find utility as plasticizers for explosive compositions of matter. Also, the esters of this invention are useful as explosives per se.

3,629,325

CLEAVING POLY(ALKYLENE OXIDES) WITH ACID ANHYDRIDES

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,446
Int. Cl. C07c *41/02, 67/00*
U.S. Cl. 260—496 10 Claims

Poly(alkylene oxide) diacetates are obtained by cleaving poly(alkylene oxides) with acetic anhydride in the

presence of acetic acid or aluminum chloride. The poly(alkylene oxide) diacetates are alcholyzed to poly(alkylene oxide) diols. Isotactic poly(alkylene oxide) diols are particularly useful reactants in the synthesis of polyurethanes. Polyurethanes are prepared by reacting a poly(alkylene oxide) diol with an organic polyisocyanate or polyisothiocyanate. Such polyurethanes are especially useful as surface coatings.

3,629,326

PERFLUORO - 1 - CYCLOALKEN-1,2-YLENE-DIPHOSPHORYL COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

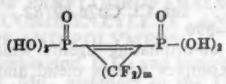
Arlen W. Frank, Grand Island, N.Y., and Charles F. Baranauckas, Memphis, Tenn., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Mar. 8, 1965, Ser. No. 438,105, now Patent No. 3,501,555, dated Mar. 17, 1970. Divided and this application Sept. 8, 1969, Ser. No. 870,803

Int. Cl. C07f *9/38*; C11d *1/34*

U.S. Cl. 260—502.4 P **2 Claims**

A perfluoro - 1 - cycloalken - 1,2 - ylenediphosphoric acid of the formula



wherein *m* is from 2 to 4.

3,629,327

LITHIUM SALT OF HYDROQUINONE SULFONIC ACID

Antonio Esteve-Subirana, Barcelona, Spain, assignor to Laboratories Om S.A., Geneva, Switzerland

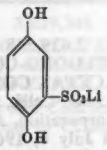
No Drawing. Continuation-in-part of application Ser. No. 600,721, Dec. 12, 1966, which is a continuation-in-part of application Ser. No. 202,981, June 18, 1962, now Patent No. 3,354,201, which in turn is a continuation-in-part of application Ser. No. 2, Jan. 4, 1960. This application Oct. 30, 1968, Ser. No. 771,977

Claims priority, application Switzerland, Nov. 9, 1967, 15,692/67, 15,693/67

Int. Cl. C07c *143/42*

U.S. Cl. 260—512 **5 Claims**

The lithium salt of hydroquinone sulfonic acid of the formula



has therapeutic value for normalizing or reducing the abnormal permeability of the capillary wall of blood vessels of a person or animal having capillar fragility, and also for treating infections relative to blood coagulation. This novel salt can be prepared by reacting p-benzoquinone with lithium bisulfite in a solvent, or by reacting the potassium salt of hydroquinone sulfonic acid with a lithium salt of an inorganic or organic acid in a solvent wherein the lithium salt of hydroquinone sulfonic acid is soluble and wherein the potassium salt formed as a by-product is slightly or not soluble.

3,629,328

PURIFICATION OF ORGANIC ACIDS

Adin L. Stautzenberger, Corpus Christi, Tex., and Alexander F. MacLean, Durham, N.H., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 564,541, July 12, 1966. This application May 20, 1969, Ser. No. 826,255

Int. Cl. C07c *51/42, 61/02*

U.S. Cl. 260—525 **11 Claims**

Process for purifying relatively insoluble carboxylic acids such as terephthalic acid by treating the insoluble acid dissolved in aqueous solutions of weak acid salts, the weak acid salts being of lithium, magnesium, tertiary amines or being tetraalkyl quaternary ammonium salts. The insoluble acid is recovered in the free acid form by merely cooling the solution to recrystallize the insoluble acid.

3,629,329

PROCESS FOR PRODUCING GRANULAR ALKALI METAL NITRILOTRIACETATE

Chung Yu Shen, St. Louis, Mo., and Norman Earl Stahlheber, Columbia, Ill., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,875

Int. Cl. C07c *101/20*

U.S. Cl. 260—534 E **6 Claims**

Caking-resistant granular alkali metal nitrilotriacetate products are prepared by forming a reaction mixture of nitrilotriacetic acid and alkali metal carbonate and water; the molar ratio of nitrilotriacetic acid to the alkali metal content of said carbonate being from about 1:2 to about 1:20, said water comprising from about 5% to about 35% by weight based upon the weight of the total reaction medium and drying the resulting mixture to obtain a detergent additive containing dialkali metal nitrilotriacetate and having a bulk density of from about 0.4 to about 0.8 g./cc. and having about 60% of its particles smaller than the openings in a U.S. Standard 10 mesh screen and about 60% larger than the openings in a U.S. Standard 60 mesh screen and less than about 8% by weight of water.

3,629,330

COMPONENTS FOR HAIR DYEING COMPOSITIONS

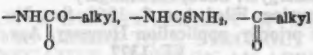
Frederick Brody, New York, N.Y., Alexander Halasz, Norwalk, Conn., and Milos S. Bil, Forest Hills, N.Y., assignors to Clairol Incorporated, New York, N.Y.

No Drawing. Filed May 24, 1965, Ser. No. 458,443

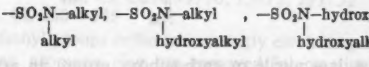
Int. Cl. C07c *103/33, 127/14, 143/78*

U.S. Cl. 260—553 A **33 Claims**

A group of N-substituted alkyl derivatives of nitroaminobenzenes which are characterized by the fact that the alkyl group carry further substituents such as —O—alkyl, —NH—CO—alkyl, —NH—CO—hydroxyalkyl, —NHCO—aryl, —$NHSO_2$—alkyl, —$NHSO_2$—aryl, —$NHCONH_2$,



—CN, —SO_2NH_2, —SO_2NH—alkyl, —SO_2NH—hydroxyalkyl,



and —SO_2—alkyl; these are useful as dyes or dye intermediates that are particularly suitable for dyeing hair.

3,629,331
STABILIZATION OF UREA PEROXIDE
Bernard L. Kabacoff, Norwalk, and Charles M. Fairchild, Old Greenwich, Conn., assignors to Revlon, Inc.
No Drawing. Filed Sept. 9, 1969, Ser. No. 856,460
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 R 3 Claims

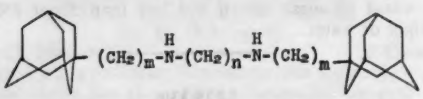
Urea peroxide is stabilized against decomposition by incorporating therewith from about at least 0.02% each by weight of urea peroxide ethylenediaminetetraacetic acid and sodium dihydrogen pyrophosphate.

3,629,332
N-(ARALKYL)FLUOROALKANESULFONAMIDES
Joseph Kenneth Harrington, Edina, and Robert D. Trepka, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Jan. 29, 1969, Ser. No. 795,050
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 F 13 Claims

N-(aralkyl)fluoroalkanesulfonamides wherein the alkyl group is substituted by one or more optionally substituted phenyl, naphthyl, or heterocyclic radicals and salts thereof and processes for their preparation are disclosed. These compounds and their compositions are plant growth modifiers, i.e. they modify and/or terminate the growth of plants.

3,629,333
POLYMETHYLENEBIS ADMANTANE AMINES
Donald Clarke Boughton, Kennett Square, Pa., and Walter E. Meier, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,969
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 P 2 Claims

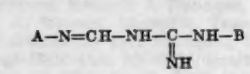
This application refers to polymethylene-bis(1-aminoadamantanes) and polymethylenebis(1-adamantanemethylamines) of the formula



where m is 0 or 1 and n is 2 to 14 which are useful in pharmaceutical compositions thereof, and methods of pounds of the above formula where n is 10 such as N,N'-decamethylenebis (adamantane-1-amine), or (adamantane-1-methylamine) are preferred.

3,629,334
SUBSTITUTED GUANYL-FORMAMIDINES
Pál Benko and László Pallos, Budapest, Lajos Váczi, Debrecen, and Endre Komlós and Ferenc Ördögh, Budapest, Hungary, assignors to Egysesult Gyogyszer-Es Tapszergyar, Budapest, Hungary
No Drawing. Filed Apr. 2, 1968, Ser. No. 718,205
Claims priority, application Hungary, Apr. 8, 1967, EE/1377
Int. Cl. C07c *129/00*
U.S. Cl. 260—565 6 Claims

Substituted guanyl-formamidines of the formula



wherein A is a nitrile or carboethoxy group, an aryl or aralkyl group or a substituted aryl or aralkyl group or a pyridyl group or a substituted pyridyl group, and B is hydrogen or an aryl group or a substituted aryl group are disclosed to be useful as hypertensive agents, virostatic agents as well as being effective against bacteria and fungi.

3,629,335
N-BENZYLIDENE CYCLOOCTYLAMINE
Jean-Claude Richer, B.P. 6128, Montreal, Quebec, Canada
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,138
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 F 1 Claim

Benzylidene cyclooctylamine is a compound medicinally useful for the treatment of central nervous system depression. The compound is prepared by azeotropically refluxing cyclooctylamine with benzaldehyde in a solvent such as to toluene.

3,629,336
LIGANDS WHICH ARE ALSO SILVER HALIDE DEVELOPING AGENTS
Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Continuation-in-part of application Ser. No. 487,054, Sept. 13, 1965. This application Dec. 1, 1969, Ser. No. 881,323
Int. Cl. C07c *49/82*
U.S. Cl. 260—590 9 Claims

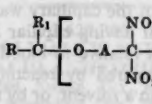
Ligands or co-ordinating agents which will form a co-ordination complex with a metal and which also include a silver halide developing function particularly a paradihydroxyphenyl silver halide developing function or a substituted derivative thereof, thereby making them additionally useful in photography.

3,629,337
PROCESS FOR PREPARING 5,8-DIMETHYL-5,6,7,8-TETRAHYDRO-1-NAPHTHOLS
Edward R. Degginger, Convent Station, and James M. Balquist, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Jan. 8, 1970, Ser. No. 1,566
Int. Cl. C07c *43/22, 39/12*
U.S. Cl. 260—613 9 Claims

5,8-dimethyl-5,6,7,8-tetrahydro-1-naphthols are prepared by reacting 1,5-hexadiene with a substituted or unsubstituted phenol in the presence of a triphenoxy aluminum catalyst. The naphthols can be converted to the corresponding N-substituted carbamates by reaction with an isocyanate. The carbamates are useful as insecticides, miticides, and nematocides.

3,629,338
CERTAIN FLUORO-CONTAINING NITRO-ACETAL COMPOUNDS
Fred E. Martin, Azusa, Calif., assignor to Aerojet-General Corporation, Azusa, Calif.
No Drawing. Filed July 6, 1964, Ser. No. 381,293
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A 8 Claims

1. As compositions of matter, the compounds having the formula:



wherein R is a radical selected from the group consisting of hydrogen and lower alkyl; R_1 is a radical selected from the group consisting of hydrogen and lower alkyl; and A is a lower alkylene radical.

3,629,339

STABILIZATION OF PHENOLS

Hans L. Schlichting, Spartanburg, S.C., and Ellis I. Lichtblau, Kenmore, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 510,681, Nov. 30, 1965. This application Mar. 28, 1969, Ser. No. 811,674

Int. Cl. C07c *39/00*

U.S. Cl. 260—621 A 20 Claims

An inorganic trivalent arsenic compound, present in a stabilizing proportion, can be used to stabilize phenol, unsubstituted polyhydric monocyclic phenols, unsubstituted fused ring phenols, unsubstituted alkylidene linked bisphenols, their lower alkyl derivatives, and their halogenated derivatives, against deterioration in color and odor with age, provided it is substantially soluble, does not discolor the phenol and must not create a visibly turbid appearance in the concentrations used. It can be used in combination with other stabilizers.

3,629,340

SYNTHESIS OF PERFLUOROPARACRESOL, POLYOXYPERFLUOROBENZYLENE AND RELATED MONOMERS AND POLYMERS

Leo A. Wall, Washington, D.C., and Joseph M. Antonucci, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Dec. 29, 1964, Ser. No. 422,089, now Patent No. 3,394,190, dated July 23, 1968. Divided and this application June 25, 1968, Ser. No. 767,863

Int. Cl. C07c *39/24*

U.S. Cl. 260—623 R 1 Claim

A method for preparing the monomers

where X may be S, O, NH or NR (where R may be either alkyl or aryl) which comprises treating octafluorotoluene with a tertiary thiobutoxy or butoxy lithium nucleophilic reagent in an ether diluent to produce an intermediate and heating the intermediate between 150° and 850° C.

3,629,341

PRODUCTION OF EPOXIDIZED ALKOXY ALKADIENES AND OF ALKANETRIOLS, PARTICULARLY 1,2,4-BUTANETRIOL

Adin L. Stautzenberger and Charles C. Hobbs, Jr., Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Aug. 15, 1968, Ser. No. 752,745

Int. Cl. C07c *31/18, 77/02*

U.S. Cl. 260—635 A 1 Claim

1,2,4-butanetriol, which is useful in manufacturing explosives, is produced by reacting a 1-alkoxy-1,3-butadiene, particularly 1-methoxy-1,3-butadiene, with an organic peroxide such as peracetic acid to form the monoepoxide derivative, which is then hydrolyzed to form 3,4-dihydroxybutyraldehyde which is then hydrogenated to form 1,2,4-butanetriol. In its broader aspects the invention embraces the conversion of any α,β-internally unsaturated aldehydoalkene to a 1-alkoxy-1,3-alkadiene by reacting the aldehydoalkene with an alkanol and pyrolyzing the resulting product to form the 1-alkoxy-1,3-alkadiene which may then be epoxidized and, if desired, converted to the corresponding alkanetriol.

3,629,342

SYNTHESIS OF FLUORODINITROMETHANE

Kurt Baum, Pasadena, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

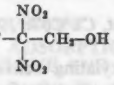
No Drawing. Filed May 28, 1969, Ser. No. 828,752

Int. Cl. C07c *79/02*

U.S. Cl. 260—644 5 Claims

This patent describes a novel method of making the compound fluorodinitromethane having the formula:

by the reaction of dinitrofluoroethanol having the formula:



with an oxidizing agent under acidic conditions.

3,629,343

PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOLS

Semen Zakharovich Levin and Aron Leibovich Shapiro, Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Neftekhimicheskikh Protsessov, Leningrad, U.S.S.R.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,995

Int. Cl. C07c *31/20*

U.S. Cl. 260—635 E 8 Claims

A process for the production of alkylene glycols by the catalytic hydration of alkylene oxides in the presence of carbon dioxide under a pressure of 10–180 atm. and at a temperature of 80–220° C., employing as catalyst alkali metal halides and compounds of the formula

wherein R_1, R_2, R_3 and R_4 are hydrogen or alkyl, and X is chlorine, bromine or iodine.

3,629,344

OXIDATIVE DEMETHYLATION OF METHYL GROUPS ORTHO TO A STRONGLY ELECTRONEGATIVE GROUP ON AN AROMATIC RING

Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,491

Int. Cl. C07c *79/10, 79/12, 121/52*

U.S. Cl. 260—645 7 Claims

Methyl groups ortho to a strongly electronegative group on an aromatic ring are removed by reacting the substituted aromatic compound with a strong base dissolved in a secondary or tertiary alcohol in the presence of oxygen.

3,629,345

REACTION PRODUCTS OF LITHIUM ALKYLS AND CERTAIN NITRO COMPOUNDS

Gary A. Harpell, Brecksville, Ohio, assignor to Goodrich-Gulf Chemicals, Inc., Cleveland, Ohio

Filed Apr. 10, 1969, Ser. No. 815,147
Int. Cl. C07c *79/10, 79/12*
U.S. Cl. 260—645 2 Claims

The reaction product of organoalkali metal compounds, such as lithium alkyls, and aromatic nitrocompounds or 1-chloro-2,6-dinitrocyclohexane, provides a composition, useful as stabilizing agents for elastomers.

3,629,346

REACTIONS OF ALKALI METAL TETRAALKYL-ALUMINUM COMPOUNDS WITH DIATOMIC HALOGENS

David L. Skinner, Arlington Heights, Ill., assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Dec. 20, 1966, Ser. No. 603,099, now Patent No. 3,468,971, dated Sept. 23, 1969. Divided and this application Apr. 14, 1969, Ser. No. 832,875
Int. Cl. C07c *19/00*
U.S. Cl. 260—652 R 7 Claims

A process for alkylating active halogen compounds, such as halogens, by reacting the active halogens with alkali metal tetraalkylaluminum compounds at a temperature of from 0° C. to 200° C.

3,629,347

CYCLOCO-OLIGOMERIZATION TO FORM MULTICYCLIC OLEFINIC RINGS

Gunther Wilke and Paul Heimbach, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

No Drawing. Continuation-in-part of abandoned applications, Ser. No. 532,900, Mar. 9, 1966, Ser. No. 76,520, Dec. 19, 1960, Ser. No. 203,753, June 20, 1962, and Ser. No. 582,775, Sept. 27, 1966. This application July 29, 1969, Ser. No. 845,901
Claims priority, application Germany, Sept. 29, 1965, St 24,439
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 6 Claims

Process of cycloco-oligomerization of a conjugated diolefin, such as butadiene or a substituted butadiene, with a different cyclic unsaturated hydrocarbon, which is an acetylene and/or a non-conjugated olefin, preferably a monoolefin, to produce multicyclic products having olefinic unsaturation in at least one of the rings. These products are made by reacting the above-mentioned reactants together in contact with a carbonyl-free, 0-valent nickel compound catalyst. Many of the new products formed by this process are described, characterized and claimed.

3,629,348

PROCESS FOR PRODUCING 5-ALKYLIDENE-2-NORBORNENES

Constantine I. Courduvelis, New Haven, and Thomas J. Brett, Jr., Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,720
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 8 Claims

5 - alkenyl - 2-norbornenes (such as 5-vinyl-2-norbornene) are isomerized to corresponding 5-alkylidene-2-norbornenes (e.g., 5-ethylidene-2-norbornene, a monomer useful as the diene in making EPDM rubber) with the aid of various one-component or two-component catalysts. One-component catalysts include alkali metal amides or hydrazides such as lithiumdimethylamide. Two-component catalysts include combinations of (1) alkali metal or alkali metal compound such as alkali metal-amide, -hydrazide, -hydride, -alkyl, -hydroxide, or alkoxide, with (II) certain carbonamides (e.g., tetramethylurea) sulfinamides (e.g., tetramethylsulfinamide), sulfonamides, or silicic diamides.

3,629,349

PROCESS FOR PRODUCING CYCLODODECATRIENE

Jo Itakura, Hisao Tanaka, and Hiroo Ito, Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 13, 1969, Ser. No. 876,606
Claims priority, application Japan, Nov. 20, 1968, 43/84,540
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 B 3 Claims

1,5,9-cyclododecatriene is prepared by cyclotrimerizing conjugated diolefines in the presence of a relatively moisture-stable catalyst composition obtained by mixing alkoxytitanium-acetoacetate complex compound with alkylaluminum chloride.

3,629,350

PROCESS FOR OBTAINING DIETHYLBENZENE

Vladimir Mocearov, Bucharest, and Georgeta Osomontanyi and Mihail Mihailescu, Ploesti, Rumania, assignors to Ministerul Industriel Chimice, Bucharest, Rumania

No Drawing. Continuation-in-part of application Ser. No. 871,594, Nov. 6, 1969, which is a continuation of application Ser. No. 633,713, Apr. 26, 1967. This application Sept. 8, 1970, Ser. No. 70,481
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T 6 Claims

A process for obtaining diethylbenzene from ethylbenzene which results from the catalytic reforming of gasolines. The ethylbenzene is disproportionated in the presence of a catalytic complex based on aluminum chloride and polyalkylbenzenes in the amount of 3–10% relative to ethylbenzene, at a temperature of 80–100° C. in the absence of hydrogen. There is obtained a mixture of diethylbenzene, benzene, and ethylbenzene containing at most 1.5% of ortho-diethylbenzene and at most 2.9% of polyalkylbenzenes.

3,629,351

CATALYTIC REARRANGEMENT OF ALKYL AROMATICS

Martin Frederick Olive, Lightwater, and Geoffrey Dovey, Shepperton, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,627
Claims priority, application Great Britain, Jan. 15, 1969, 2,405/69
Int. Cl. C07c *3/00, 15/08*
U.S. Cl. 260—672 T 8 Claims

In the catalytic rearrangement of alkyl aromatics over a catalyst of a hydrogenating component or an alkali-cation deficient zeolite, the feedstock contains less than

0.5% wt., preferably less than 0.1% wt. of non-aromatic hydrocarbons so that the catalyst activity is increased. The preferred zeolite is decationised mordenite and the preferred hydrogenating component a Group VIII metal e.g. nickel added by ion-exchange. The operating conditions may be 300–525° C., 0–1500 p.s.i.g., 0.1–10 v./v./hr. 1,000–15,000 s.c.f. H_2/B. Paraffins were found to be a permanent and naphthenes a temporary poison for the catalyst.

3,629,352

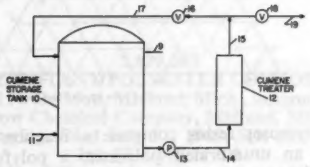
REDUCTION OF HYDROPEROXIDE CONTENT OF CUMENE

Theodore S. Hoover, Corpus Christi, Tex., assignor to Sun Oil Company, Philadelphia, Pa.

Filed June 27, 1969, Ser. No. 837,281

Int. Cl. C07c *7/18, 7/12*

U.S. Cl. 260—674 A 5 Claims



Cumene containing a small percentage of hydroperoxide is treated in liquid phase with activated carbon to reduce the hydroperoxide content.

3,629,353

HYDROCARBON PYROLYSIS PROCESS

Robert H. Reitsema, 2766 S. Clayton, Denver, Colo. 80210, and Lynn P. Walker, 8261 Mehring Oed 77B, Germany

No Drawing. Continuation-in-part of application Ser. No. 694,432, Dec. 29, 1967. This application Oct. 8, 1969, Ser. No. 866,429

Int. Cl. C07c *11/24, 3/30;* C10d *9/26*

U.S. Cl. 260—679 R 7 Claims

The present invention comprises, in a process for the pyrolysis of naphtha, the improvement consisting essentially of feeding from about 1.5 to about 2.2 pounds of steam per pound of naphtha fed to the pyrolysis furnace while feeding about 4.0 to about 6.5 pounds per minute of hydrocarbons per square foot of cross sectional area of said furnace.

3,629,354

HALOGENATED HYDROCARBONS

William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed July 14, 1969, Ser. No. 841,621

Int. Cl. C07c *11/04;* B01j *11/22*

U.S. Cl. 260—683.3 11 Claims

Process for the preparation of vinyl chloride and the co-production of ethylene from ethane in the presence of oxygen and hydrogen chloride. A preferred catalyst includes copper or iron chloride, rare earth chloride, alkali metal chloride, and manganese chloride on a chromia-alumina support.

3,629,355

PREPARATION OF LINEAR OLEFIN PRODUCTS

Arthur W. Langer, Jr., Watchung, and Herschel T. White, Montclair, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 562,132, July 1, 1966, now Patent No. 3,441,630, which is a continuation-in-part of application Ser. No. 428,836, Jan. 28, 1965, which in turn is a continuation-in-part of application Ser. No. 55,845, Sept. 8, 1960, now Patent No. 3,168,588. This application Mar. 4, 1969, Ser. No. 804,289

The portion of the term of the patent subsequent to Apr. 29, 1986, has been disclaimed

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 7 Claims

A linear alpha olefin product comprising at least 90 mole percent linear alpha olefins is prepared by polymerizing ethylene in the presence of a catalyst containing the reaction product of a transition metal halide and an aluminum alkyl, the reaction being effected in a polar solvent at ethylene pressures in excess of 50 p.s.i.a. and a mole ratio of ethylene to product olefin of at least about 0.8.

3,629,356

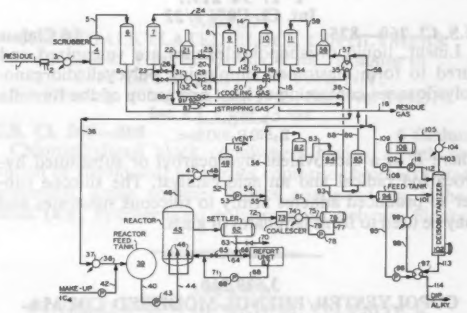
MOLECULAR SIEVE ADSORPTION AND ALKYLATION OF ETHYLENE AND PROPYLENE

Eddie U. Nakayama, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 12, 1969, Ser. No. 875,795

Int. Cl. C07c *3/52, 3/56*

U.S. Cl. 260—683.53 10 Claims



A process for the production of alkylate from a refinery residue gas stream. Molecular sieves adsorb ethylene and propylene from the stream, and these in turn are desorbed with an alkylatable hydrocarbon. The mixture is catalytically converted to alkylate in a reactor cooled by evaporation of excess alkylatable hydrocarbon and the latter is recirculated for stripping of additional adsorbed ethylene and propylene.

3,629,357

PRODUCTION OF MALEIC ACID COPOLYMERS AND HYDROXY DERIVATIVES THEREOF

Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,805

Int. Cl. C08f *1/00, 15/02, 27/14*

U.S. Cl. 260—78.5 R 8 Claims

Styrene or like monomer is copolymerized with maleic anhydride in the presence of water and water-miscible organic solvent to simultaneously effect copolymerization

and hydrolysis and directly provide an acid copolymer which can be reacted with monoepoxide to provide derivatives having increased hydroxy functionality.

3,629,358

TOUGH UNSUPPORTED FILMS FORMED FROM ORGANOPOLYSILOXANES

Harry F. Lamoreaux, Schenectady, and Frank J. Modic, Scotia, N.Y.; said Lamoreaux assignor to General Electric Company

No Drawing. Continuation of application Ser. No. 514,371, Dec. 16, 1965. This application July 2, 1969, Ser. No. 845,606

Int. Cl. C08g *47/04, 47/06*

U.S. Cl. 260—825 **3 Claims**

Silicone films having a tensile strength in excess of 900 p.s.i. contain polydiorganosiloxane chains having at least 2500 diorganosiloxy units cross-linked through cross-linking polysiloxane blocks consisting of $R_3SiO_{0.5}$ units and SiO_2 units. The film is formed by condensing a resinous copolymer of $R_3SiO_{0.5}$ units and SiO_2 units with a silanol-terminated polydiorganosiloxane containing at least 2500 diorganosiloxane units. The films of the present invention are particularly useful in the manufacture of surgical gloves.

3,629,359

METHOD FOR PREPARING ORGANOPOLYSILOXANE ELASTOMERS

Siegfried Nitzsche, Jurgen Burkhardt, and Karl-Heinrich Wegehaupt, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,788

Claims priority, application Germany, Sept. 25, 1968, P 17 94 219.7

Int. Cl. C07f *7/22*

U.S. Cl. 260—825 **16 Claims**

Linear, liquid organopolysiloxanes are vulcanized and cured to form elastomers employing polycyclicdiorganopolysiloxanes containing at least one group of the formula

$$R_2\overset{\overset{O}{|}}{SiO}R_2SiO\overset{\overset{O}{|}}{Si}=$$

where R is a monovalent hydrocarbyl or substituted hydrocarbyl radical and an acid catalyst. The silicone rubber so produced adheres firmly to siliceous substrates and may be used to form laminates of glass.

3,629,360

COPOLYESTER/PHENOL-MODIFIED COUMARONE-INDENE BLEND COMPOSITIONS

Dean C. Burkhart, Swarthmore, Lee R. Conrad, Springfield, and John B. Stokes III, Philadelphia, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,455

Int. Cl. C08g *31/04*

U.S. Cl. 260—829 **10 Claims**

Blends of copolyester and phenol-modified coumarone-indene resins having about 20 to 85 percent by weight copolyester, based on total combined weight of copolyester and phenol-modified coumarone-indene, are provided for use as adhesive compositions, films, magnetic tape binders, staple cements and coatings.

3,629,361

CURABLE POLYEPOXIDE COMPOSITIONS CONTAINING POLYMERS OF CYCLIC ESTERS

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,312

Int. Cl. C08g *45/06*

U.S. Cl. 260—830 R **18 Claims**

This invention relates to curable polyepoxide compositions, containing a polymer of a cyclic ester, which exhibit excellent mold-release properties and excellent flow and when cured to infusible products are characterized by excellent heat distortion temperatures.

3,629,362

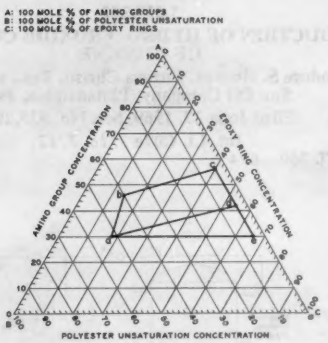
THERMOSET POLYESTER RESINS

Earl F. Carlson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 6, 1969, Ser. No. 796,982

Int. Cl. C08g *45/14, 51/28*

U.S. Cl. 260—835 **11 Claims**


A: 100 MOLE % OF AMINO GROUPS
B: 100 MOLE % OF POLYESTER UNSATURATION
C: 100 MOLE % OF EPOXY RINGS
AMINO GROUP CONCENTRATION
EPOXY RING CONCENTRATION
POLYESTER UNSATURATION CONCENTRATION

Novel thermoset resins comprise a reaction product mixture of an unsaturated polyester, a polyfunctional amine, a polybutene and, optionally, an epoxide resin.

3,629,363

STABILIZED CHLOROSULFONATED POLYETHYLENE

Ernest John Breda, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 16, 1969, Ser. No. 842,350

Int. Cl. C08d *11/04*

U.S. Cl. 260—837 R **3 Claims**

A process for stabilizing chlorosulfonated polyethylene against heat degradation by incorporating therein 0.1–1.5 parts by weight of an epoxy compound, 0.1–1.5 parts by weight of a barium, strontium, calcium, or lead (II) salt, and 0.01–0.5 part of a rubber antioxidant. A heat stabilizing agent for chlorosulfonated polyethylene.

3,629,364

PHENOLIC RESIN COMPOSITIONS CONTAINING POLYMERS OF CYLIC ESTERS

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,321

Int. Cl. C08g *37/16*

U.S. Cl. 260—838 **18 Claims**

This invention relates to phenolic resin composition, containing polymers of cyclic esters, which have excellent mold-release properties and are excellently suited for use in molding applications to form shaped articles of desired configuration characterized by excellent physical properties such as excellent toughness and excellent high temperature rigidity.

3,629,365

FLAME RETARDANT POLYESTERS CONTAINING POLYAMIDES AND PHOSPHINE OXIDES

James H. Gardner, Enka, N.C., assignor to Akzona Incorporated, Enka, N.C.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,225

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PE **12 Claims**

Flame retarded polyester containing a flame retarding amount of a thermally stable nitrogen containing poly-

meric flame retardant and a flame retarding amount of a thermally stable phosphine oxide flame retardant, the combined flame retardant effect of said flame retardants being synergistic.

3,629,366

SHAPED ARTICLE FROM A MIXTURE OF POLYETHYLENE TEREPHTHALATES OF DIFFERENT REDUCED VISCOSITIES

Ludwig Brinkmann, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,941
Claims priority, application Germany, Nov. 9, 1967, P 16 94 218.0
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 8 Claims

Process for the manufacture of a polyethylene terephthalate moulding composition of average reduced specific viscosity suitable for injection moulding consisting of at least two polyethylene terephthalates having very different viscosities.

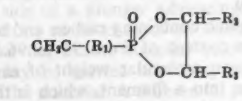
3,629,367

FIRE-RESISTANT POLYESTER COMPOSITIONS

Donald N. De Mott, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 22, 1969, Ser. No. 843,769
Int. Cl. C08f *21/00*
U.S. Cl. 260—867 13 Claims

Fire-resistant, cross-linked polyester compositions are prepared by reacting a curable polyester resin with a vinylphosphonate of the formula



wherein R_1, R_2 and R_3 are hydrogen or hydrocarbon groups.

3,629,368

PROCESS FOR PRODUCING MODIFIED PROPYLENE POLYMER

Junichi Fukuda, Kijuro Tashiro, Mutsuo Sennari, and Kenjiro Nagashima, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 433,487, Feb. 17, 1965. This application Aug. 18, 1969, Ser. No. 853,591
Claims priority, application Japan, Feb. 20, 1964, 39/8,785
Int. Cl. C08f *15/04, 1/42*
U.S. Cl. 260—878 B 5 Claims

Modified propylene polymer is provided having improved impact resistance and toughness at low temperature as well as having a high softening point and stiffness. The modified propylene polymer is produced by a process of polymerizing a member of the group consisting of propylene and ethylene and subsequently polymerizing continuously in the same system the other member of said group, said polymerization being effected at a temperature of 30–100° C., at a pressure of from 1–10 atmospheres and utilizing as catalysts dialkylaluminum monohalide and titanium trichloride, the polymerization of ethylene being effected in the presence of an average amount of from 0–25% by volume of propylene and the amounts of ethylene and propylene fed to the reaction system being adjusted so that the resulting modified propylene polymer contains from 5 to 40% by weight ethylene.

3,629,369

PROCESS FOR THE PREPARATION OF MODIFIED POLYVINYL CHLORIDE WITH HIGH IMPACT RESISTANCE

Philippe Lalet, Orthez, and Andre Miletto, Pau, France, assignors to Société Anonyme dite: Société Nationale des Petroles d'Aquitane, Courbevoie, France

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,296
Claims priority, application France, Dec. 30, 1968, 181,996
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—879 4 Claims

Polyvinyl chloride having high impact resistance is disclosed. This polyvinyl chloride is prepared by polymerizing an aqueous suspension of vinyl chloride in the presence of halogenated butyl rubber.

3,629,370

PROCESS FOR THE PRODUCTION OF THERMOPLASTIC-ELASTIC MOULDING COMPOSITIONS OF HIGH IMPACT AND NOTCHED IMPACT STRENGTH

Karl-Heinz Ott, Leverkusen, Herbert Schuster, Cologne-Stammheim, Karl Dinges, Odenthal, and Harry Rohr, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 13, 1968, Ser. No. 759,801
Claims priority, application Germany, Oct. 4, 1967, F 53,670
Int. Cl. C08f *1/76, 15/04*
U.S. Cl. 260—880 4 Claims

Graft copolymers of a diene polymer as a base and a styrene type and an acrylonitrile type monomer are produced with a water-soluble, aliphatic azo-compound as a catalyst.

3,629,371

CHLOROALKYLATED BLOCK COPOLYMERS

De Loss E. Winkler, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,379
Int. Cl. C08f *15/04*
U.S. Cl. 260—880 6 Claims

Chloroalkylated block copolymers having a high retention or rheological properties comprise chloroalkylated monovinyl arene polymer blocks connected by alpha-olefin (e.g., hydrogenated polyisoprene) polymer blocks.

3,629,372

STABILIZATION OF RADIAL TELEBLOCK COPOLYMERS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,827
Int. Cl. C08f *15/04*
U.S. Cl. 260—880 8 Claims

Radial block copolymers of butadiene and styrene are rendered stable against degradation by the addition thereto of a stabilizer system which comprises (a) a hindered phenol (b) a substituted aromatic secondary amine (c) an organic phosphite and optionally (d) a thiodipropionate.

3,629,373

MASTICATION OF 2-ALKYL BUTADIENE-1,3-ACRYLIC NITRILE COPOLYMER

William H. Embree, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Continuation of application Ser. No. 584,971, Oct. 7, 1966. This application Oct. 14, 1969, Ser. No. 871,737
Int. Cl. C08d *5/00*
U.S. Cl. 260—894 9 Claims

Vulcanizable compositions of improved processability are obtained by masticating a high molecular weight

copolymer of an alkadiene and an acrylic nitrile at a temperature of from 50 to 200° C. to reduce the Mooney viscosity from at least 40 to a value below 20.

3,629,374

LACTONE/ALKYLENE OXIDE COPOLYMERS AS PLASTICIZERS FOR VINYL CHLORIDE RESINS

Robert Dean Lundberg, Somerville, N.J., and Frank Paul Del Giudice, Charleston, and Robert Gladden Kelso, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,311

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **6 Claims**

Plasticized vinyl chloride resin containing as the plasticizer therefor, a lactone/alkylene oxide copolymer.

3,629,375

SULFINYL THIOL- AND DITHIO-PHOSPHATES

Paul C. Aichenegg, Prairie Village, Kans., and Richard A. Thornhill, Kansas City, Mo., assignors to Chemagro Corporation, Kansas City, Mo.

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,272

Int. Cl. C07f *9/16*; A01n *9/36*

U.S. Cl. 260—934 **12 Claims**

Sulfinyl thiol- and dithio-phosphates, i.e. O,O-dialkyl-S-(trichloroethyl and dichlorovinyl sulfinyl)-thiol- and dithio-phosphates, or O,O-dialkyl-S-(trichloroethyl thionyl and dichlorovinyl thionyl) thiol- and thionothiol-phosphates, which possess strong fungicidal, nematocidal and insecticidal properties and which may be produced by conventional methods.

3,629,376

S-CARBOETHOXYMETHYL-S-S-DIALKYL-TRITHIOPHOSPHATES

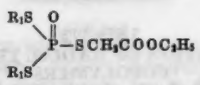
Erik K. Regel, Mission, Kans., and Marion F. Botts, Independence, Mo., assignors to Chemagro Corporation, Kansas City, Mo.

No Drawing. Original application May 26, 1967, Ser. No. 641,453, now Patent No. 3,502,771, dated Mar. 24, 1970. Divided and this application July 3, 1969, Ser. No. 870,974

Int. Cl. A01n *9/36*; C07f *9/08*

U.S. Cl. 260—941 **3 Claims**

Compounds are prepared having the formula



where R_1 and R_2 are alkyl of 2 to 4 carbon atoms. The compounds are useful in killing fungi.

3,629,377

PROCESS FOR PREPARING PHOSPHATE ESTER SURFACE ACTIVE AGENTS IN THE PRESENCE OF A BIS(HYDROXYMETHYL) PHOSPHINIC ACID COLOR INHIBITOR

Leslie M. Schenck, Mountainside, and Leslie G. Nunn, Jr., Newark, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 543,544, Apr. 19, 1966. This application Feb. 20, 1969, Ser. No. 801,173

Int. Cl. C07f *9/08*

U.S. Cl. 260—980 **11 Claims**

An improved process for producing phosphate ester surface active agents by the reaction of P_2O_5 and an organic hydroxyl-containing compound, the improvement relating to conducting such reaction in the presence of a color inhibitor comprising bis(hydroxymethyl) phosphinic acid.

3,629,378

METHOD OF EXTRACTING TRI-SUBSTITUTED HYDROCARBYL PHOSPHATES

Yutaka Kodama and Tsutomu Kodama, Toyama-shi, and Masao Nakabayashi, Namerikawa-shi, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,242

Int. Cl. C07f *9/08*; C10l *1/26*

U.S. Cl. 260—990 **5 Claims**

Selective separation of the tri-substituted hydrocarbyl phosphates only by extraction from an aqueous solution of water-soluble tri-substituted hydrocarbyl phosphates of the formula $(RO)_2P(O)(OR')$ wherein R is an alkyl or alkenyl group having 1 to 3 carbon atoms or said groups substituted by chlorine and R' is an alkyl or alkenyl group having 1 to 4 carbon atoms or said groups substituted by chlorine. The compounds are useful as additives for gasoline, plasticizers for thermoplastic resins and flame retarding agents for rigid polyurethane foam, polyester resin, etc.

ERRATA

For Classes 260—677 A and 260—79.3 R see:
Patent Nos. 3,629,478 and 3,629,479

3,629,379

PRODUCTION OF CARBON FILAMENTS FROM LOW-PRICED PITCHES

Sugio Otani, Kiryu-shi, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of application Ser. No. 695,356, Jan. 3, 1968, which is a continuation-in-part of application Ser. No. 521,408, Jan. 18, 1966, both now abandoned. This application Nov. 6, 1969, Ser. No. 874,653

The portion of the term of the patent subsequent to July 9, 1985, has been disclaimed

Int. Cl. C01b *31/07*; D06m *11/12, 11/04*

U.S. Cl. 264—29 **20 Claims**

A low-priced pitch containing carbon and hydrogen and having a carbon content of from 91 to 96.5 percent by weight and a mean molecular weight of at least 400 is readily melt-spun into a filament, which is then rendered infusible and thereafter carbonized, whereupon a carbon filament of good properties is obtained. This carbon filament can be further graphitized to produce a graphite filament. Pitches which do not meet the aforementioned requirements can be treated in various ways to make them melt-spinnable. The infusibilization treatment includes heating in air, oxygen, or ozone or the use of a hardening agent either admixed with the pitch prior to spinning or applied as a coating to the filaments at the time of spinning.

3,629,380

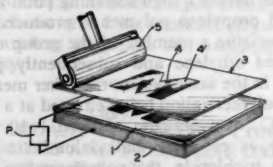
FOAMED SURFACE PATTERNS

James W. Edwards, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 18, 1969, Ser. No. 859,063

Int. Cl. B29d *27/08*

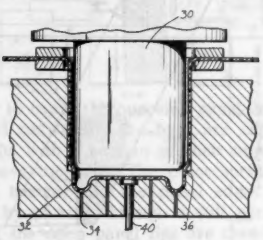
U.S. Cl. 264—53 **4 Claims**



A method for producing a foamed image pattern on the surface of a substrate by electrostatically depositing foamable resin particles on the substrate in a desired pattern. The resin particles may preferably be incorporated with a suitable ink to provide the proper color.

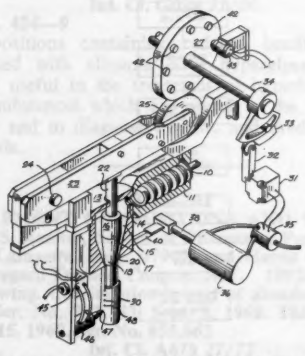
The substrate is then immersed into a blowing agent and heated in order to expand the resin particles thereby providing an image having a relief with respect to the surface of the substrate.

3,629,381
PROCESS FOR MANUFACTURING TOUGH PLASTIC ARTICLES OF MANUFACTURE
George E. Walker, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.
Continuation of application Ser. No. 655,827, July 25, 1967. This appplication Oct. 22, 1969, Ser. No. 868,649
Int. Cl. B29c *17/04, 17/08*
U.S. Cl. 264—92 **5 Claims**



A method for forming plastic articles having improved structural properties. A portion of a thermoplastic sheet is clamped about its periphery and the clamped portion brought to a temperature at which it can be oriented. The sheet portion is then drawn axially into a mold cavity and radially outwardly against the surface of the cavity so as to stretch and orient the sheet. The drawn material is then severed below at least one-half the total draw between an edge peripherally surrounding the drawn material and the side of a plunger advancing in the direction of the axial draw so as to form an oriented article from the portion of the drawn material below the edge. The axial draw may be carried out using the same plunger used to sever the material. A differential pressure may also be used to effect the radial draw.

3,629,382
METHOD FOR PROGRAMMING PARISONS
Clement V. Fogelberg, Boulder, and Lowell H. Erickson, Denver, Colo., assignors to Ball Corporation
Original application Dec. 29, 1966, Ser. No. 610,211, now Patent No. 3,466,704, dated Sept. 16, 1969. Divided and this application Dec. 30, 1968, Ser. No. 787,845
Int. Cl. B29c *17/07*
U.S. Cl. 264—98 **4 Claims**

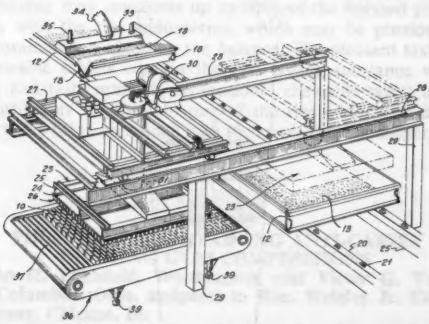


A method for marking parisons having axially variable wall thicknesses relative to the means for varying the wall thickness in order to determine which portion of the varying means cycle is associated with a flow in a blown article.

3,629,383
PROCESS FOR MAKING PAPER AND AIR-PERVIOUS CARDBOARD OR BOARDLIKE STRUCTURES PREDOMINANTLY OF POLYTETRAFLUOROETHYLENE
Yutaka Kometani, 7–7, 1-chome, Midorigaoka, Toyonaka-shi; Shun Koizumi, A22–104, 2–5 Shinsenri; Higashi-machi, Toyonaka-shi; Kazuo Kubota, C–59–305, 1–3 Aoyamadia, Suita-shi; and Takeaki Nakazima, B8–305, 2–41 Shinsenri, Kita-machi, Toyonaka-shi, all of Osaka-fu, Japan
No Drawing. Continuation-in-part of application Ser. No. 403,367, Oct. 12, 1964. This application May 6, 1970, Ser. No. 35,285
Int. Cl. B31d *1/00*
U.S. Cl. 264—112 **8 Claims**

A process of making air-previous sheets of polytetrafluoroethylene and such sheets so produced in the form of thin paper, cardboard and boardlike structures, which comprises dispersing polyetetrafluoroethylene fibrous powder in an aqueous medium having a surface tension at 25° C. of below 40 dynes per centimeter, forming a web therefrom, and thereafter sintering the web. The polytetrafluoroethylene fibrous powder is one having an average fiber length of 100 to 5,000 microns, an average shape factor of not less than 10 and an anisoptropic expansion factor of 1.30 to 7.00. A thermographic powder may also be present in the dispersion.

3,629,384
METHOD FOR FORMING COMPOSITE BUILDING ELEMENTS
Reinhold Magnus Elgenstierna, Stockholm, Sweden, assignor to Tegelindustriens Centralkontor Ab, Stockholm, Sweden
Continuation-in-part of abandoned application Ser. No. 609,758, Jan. 17, 1967. This application Sept. 4, 1969, Ser. No. 855,345
Int. Cl. B28b *23/00*
U.S. Cl. 264—130 **5 Claims**



A method for the formation of building elements of the type having a plurality of bricks, tiles, or stones joined together by mortar. A mass of foamable plastics material is positioned in a mold and the bricks or stones are partially immersed therein, thus keeping them in position and preventing feathering of mortar on to the element face or other unsightly results in the forming process.

3,629,385

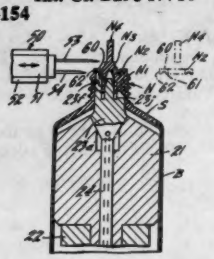
METHOD OF FORMING A CONTAINER NECK

Charles Arthur Badavas, Allendale, N.J., Raymond William Landry, Hudson, Mass., and John William Piltzecker, Easton, Pa., assignors to American Can Company, New York, N.Y.

Continuation-in-part of application Ser. No. 576,420, Aug. 31, 1966. This application Oct. 27, 1969, Ser. No. 869,675

Int. Cl. B29c 17/10

U.S. Cl. 264—154 6 Claims



The manufacture of the structurally complex molded neck element of a "center lock" captive closure, which neck element comprises a sealing plug centrally suspended within a hollow body on spaced radial webs, thereby to define dispensing apertures between the plug and body. The forming procedure includes the injection molding of the neck element including an inverted annular member surrounding the plug and bridging the annular space between the plug and body, and thereafter severing and entirely removing the annular member to open and form elongated dispensing apertures between the webs and surrounding the plug in a precisely shaped neck element.

3,629,386

PROCESS FOR CRIMPING FILAMENTS

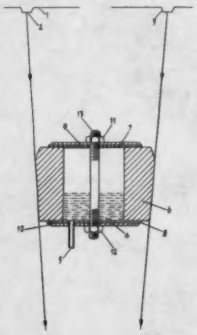
Peter Edwin Knapp, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of abandoned application Ser. No. 430,686, Feb. 5, 1965. This application Sept. 8, 1969, Ser. No. 856,922

Claims priority, application Great Britain, Feb. 5, 1964, 4,880/64

Int. Cl. D01d 5/22

U.S. Cl. 264—168 12 Claims



A process for making crimped polyester filaments having special properties comprises melt-spinning the filaments, liquid-quenching the hot filaments asymmetrically by contacting one side of the filaments with a continuously renewed thin film of liquid on a solid tapered body located below the spinneret, drawing the filaments, releasing the tension to develop crimp and then heat-setting the crimped filaments.

3,629,387

PROCESS FOR PRODUCING IMPROVED IMPACT-RESISTANT POLYSTYRENE FILMS

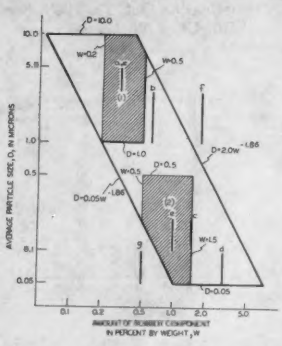
Takeshi Watanabe, Kamakura, Masatsugu Yoshida and Takaichi Akutagawa, Yokohama, and Shiro Noguchi, Hiratsuka, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Apr. 14, 1969, Ser. No. 815,900

Claims priority, application Japan, Apr. 16, 1968, 43/25,145; Oct. 12, 1968, 43/73,907

Int. Cl. B29c 17/07; B29d 23/04; C08f 19/04

U.S. Cl. 264—209 10 Claims



Process for producing continuously in a stable operation improved, rubber-modified polystyrene films which are high in tensile strength, impact strength, tearing strength, transparency and surface smoothness and which are very readily thermoformed comprising extruding a rubber-modified polystyrene in which the amount of contained rubber and the particle size of the rubber, a copolymer of this rubber and a vinyl aromatic compound or a mixture of the rubber and copolymer contained by the polystyrene are in a specified relationship, using special extrusion conditions in a tubular-film extrusion process which includes biaxially stretching under specified conditions.

3,629,388

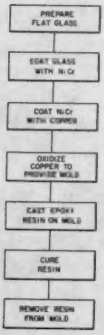
CASTING PROCEDURE FOR HIGH QUALITY EPOXY LAYERS

Irving W. Wolf and Heinz Lienhard, Palo Alto, Calif., and Moses I. Levitsky, deceased, late of Palo Alto, Calif., by Rosanne A. Levitsky, administratrix, Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 12, 1970, Ser. No. 2,077

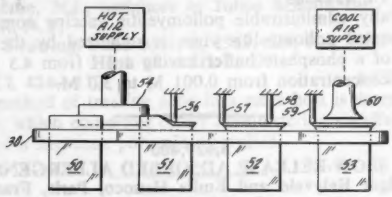
Int. Cl. B29c 1/04

U.S. Cl. 264—219 5 Claims



A precision epoxy resin structure is prepared by casting an epoxy resin on a mold of oxidized copper or silver. The method is particularly adapted for making flat epoxy substrates for closed flux storage elements.

3,629,389
METHOD FOR FLARING THE UPPER ENDS OF PLASTIC BAGS
John J. Quackenbush, Monroe, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed Apr. 7, 1967, Ser. No. 629,328
Int. Cl. B29c 17/02
U.S. Cl. 264—339 4 Claims



In order to cause the opposing panel ends of a plastic bag to curl outwardly, the bags are captured between moving belts with a portion of their upper surfaces extending above the belts. The outer surfaces of the bag panels are heated, and the panel edges are forced to flare open by passing through a stiff wire. The interior surfaces of the open panel lips are then rapidly cooled to introduce a permanent tendency for the bag panels at the bag opening to curl away from one another.

3,629,390
AVIAN SPECIFIC, BIO-AFFECTING PREPARATION AND TREATMENT METHOD
Bernard C. Wentworth, Amherst, Mass., assignor to the United States of America as represented by the Secretary of the Interior
Filed Dec. 18, 1969, Ser. No. 886,227
Int. Cl. A61k 27/12
U.S. Cl. 424—2 8 Claims

An avian specific, bio-affecting composition is prepared by dispersing a physiologically active compound within an abraidable matrix inert to mammalian digestive processes. Controlled release of the active compound occurs as the preparation is abraided in a bird's gizzard.

3,629,391
METHOD FOR DIAGNOSING DIABETES
Richard L. Fenichel, Wyncote, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Original application Jan. 23, 1967, Ser. No. 610,739, now Patent No. 3,475,534, dated Oct. 28, 1969. Divided and this application Apr. 28, 1969, Ser. No. 847,749
Int. Cl. G01n 31/00
U.S. Cl. 424—9 1 Claim

Compositions containing reduced insulin B chains complexed with albumin have hyperglycemic activity and are useful in the treatment of hyperinsulinism, to screen substances which are useful in the treatment of diabetes and to diagnose diabetic and prediabetic states in animals.

3,629,392
ENTRAPMENT COMPOSITIONS AND PROCESSES
Gilbert S. Banker, School of Pharmacy, Purdue University, Lafayette, Ind. 47907, and Harris Goodman, 3 Beauregard Terrace, Congers, N.Y. 10920
No Drawing. Continuation-in-part of abandoned application Ser. No. 757,143, Sept. 3, 1968. This application Aug. 15, 1969, Ser. No. 850,663
Int. Cl. A61k 27/12
U.S. Cl. 424—22 14 Claims

Pharmaceutical compositions are prepared by combining in the presence of water a polymer having acidic or basic functionality with a pharmaceutically active material having respectively basic or acidic functionality, coagulating or otherwise separating the product produced and then formulating the product by conventional techniques into suitable dosage forms. The resulting products are characterized by possessing unique sustained release, enteric or delayed release properties.

3,629,393
RELEASE-SUSTAINING-TABLET
Atsushi Nakamoto, Kawasaki-shi, and Keizabuto Ogwa and Tadashi Ukigaya, Tokyo, Japan, assignors to Nikken Chemical Co., Ltd., Tokyo, Japan
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,222
Int. Cl. A61k 27/12
U.S. Cl. 424—22 8 Claims

Time-release tablets are provided by blending and compressing the following types of granules: (A) granules comprising a medically active ingredient, a hydrophobic salt of a fatty acid, and a non-toxic polymer compound which is insoluble in the digestive fluids, (B) granules comprising a water-swellable, high molecular weight compound and a pharmaceutical carrier, and, (C) granules comprising a pharmaceutical carrier and, if necessary, a medically active ingredient or a buffering agent.

3,629,394
PLEASANT TASTING CHEWABLE TABLETS AND THEIR PRODUCTION
William E. Gaunt and Marjorie Claire Gaunt, Hackensack, N.J. (both of P.O. Box 744, Stroudsburg, Pa. 18360)
No Drawing. Filed Oct. 13, 1969, Ser. No. 866,018
Int. Cl. A61k 15/00
U.S. Cl. 424—38 5 Claims

Water-soluble bad-tasting drugs and vitamins are put into chewable tablet form wherein the drugs and vitamins have a pleastant taste and are readily available upon ingestion. A water solution or water-alcohol solution of the bad-tasting substance is absorbed into rice endosperm using about enough solution for complete hydration or slightly less, followed by drying. Precooked rice endosperm can also be used. The drugs include phenothiazine tranquilizers and barbiturates and the vitamins include thiamin, niacinamide and pyridoxine. The water-soluble substance may constitute up to 60% of the finished product, with the rice endosperms, which may be previously comminuted, making up the balance. The pleasant tasting chewable tablets contain the bad tasting substance with the bad taste masked, conventional chewable tablet base constituents for the tableting of the rice endosperm-drug particles being combined with the treated rice endosperms.

3,629,395
PHOSPHORUS-CONTAINING ANTI-CARIES CHEWING GUM COMPOSITIONS
John H. Litchfield, Worthington, and Victor G. Vely, Columbus, Ohio, assignors to Wm. Wrigley Jr. Company, Chicago, Ill.
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,764
Int. Cl. A61r 7/16
U.S. Cl. 424—48 5 Claims

Unique chewing gum compositions possessing anti-caries activity characteristics comprising a chewing gum base having incorporated therein a phosphate, a phosphorylated α-hydroxyaldehyde, or a phosphonic acid derivative. Specific phosphorous-containing compounds which, upon evaluation, exhibited the ability to inhibit the growth of oral microorganisms and/or the formation of

acids in the oral cavity are: 1 hydroxyethyl phosphonic acid, 1,2-dihydroxyethylphosphonic acid, 1-amino-ethylphosphonic acid, 2-aminoethylphosphonic acid, 1-aminomethylphosphonic acid, 2-amino, 4-phosphonobutyric acid, 2-amino, 3-phosphonopropionic acid, glyceraldehyde-3-phosphoric acid and glyceraldehyde diphosphate.

3,629,396
AVIAN ENCEPHALOMYELITIS VACCINE
Vance J. Yates, Kingston, R.I., and Lawrence O. Mancini, White Plains, N.Y., assignors to University of Rhode Island, Kingston, R.I.
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,653
Int. Cl. C12k *5/00, 7/00*
U.S. Cl. 424—89 **15 Claims**

Avian encephalomyelitis vaccine is a high titer suspensian propagated in chicken embryo cell cultures.

3,629,397
THERAPEUTIC AND DIAGNOSTIC ALLERGENIC EXTRACTS AND PROCESS FOR PREPARING SAME
Walter Edward Waterbury, Cheshire, and Alice Cheryl Barnes and Herman Henry Walchli, Jr., West Haven, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,911
Int. Cl. A61k *23/00*
U.S. Cl. 424—91 **18 Claims**

A process for preparing therapeutic and diagnostic antigènic or allergenic extracts and the product obtained thereby comprising extracting substances known to contain physiologically active principles which elicit allergenic responses with an aqueous extracting fluid, separating the aqueous extracting fluid containing the water-soluble active principles from the insoluble material therein, extracting the insoluble material with an aqueous-organic solvent or non-aqueous organic solvent extracting fluid, separating the organic solvent extracting fluid from the insoluble material therein, separating the active principles contained in the organic solvent from the organic solvent and finally preferably combining the initial aqueous extracting fluid containing the water-soluble active principles with the active principles obtained from the organic solvent extracting fluid.

3,629,398
FOAMABLE TOOTHPASTES
William H. Schmitt, Elmhurst, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.
No Drawing. Filed Aug. 13, 1968, Ser. No. 752,185
Int. Cl. A61k *7/16*
U.S. Cl. 424—43 **10 Claims**

Foamable toothpaste, adapted to be packaged in conventional non-pressurized containers as, for example, metal or plastic collapsible or squeezable toothpaste tubes, comprising substantially anhydrous compositions containing a compressible water-insoluble gas, particularly in the form of an aliphatic hydrocarbon or halogenated hydrocarbon, dissolved in an organic solvent, such as a polyethylene glycol, which organic solvent is also water-soluble, and a surface active agent, with or without supplemental ingredients such as abrasive agents, flavoring agents, etc. When said toothpaste is wetted with water and brushed against teeth in the mouth, said dissolved compressible gas is displaced from said organic solvent and is released in the form of a gas to form a foam in the mouth.

3,629,399
STABLE POLIOMYELITIS VACCINES
Rudolf Mauler, Cappel, near Marburg an der Lahn, and Horst Gruschkau, Marbach, near Marburg an der Lahn, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany
No Drawing. Filed Aug. 30, 1968, Ser. No. 756,387
Claims priority, application Germany, Sept. 5, 1967, P 16 17 356.1
Int. Cl. A61r *27/00*
U.S. Cl. 424—89 **3 Claims**

Orally administrable poliomyelitis vaccine containing attenuated poliomyelitis virus is stabilized by the addition of a phosphate buffer having a pH from 4.5 to 7.0 at a concentration from 0.001 M to 3.0 M.

3,629,400
SLOW-RELEASE ADSORBED ALLERGENS
Edgar Relyveld and Emile Henoco, Paris, France, assignors to Institut Pasteur, Paris, France
No Drawing. Filed Sept. 20, 1968, Ser. No. 761,329
Claims priority, application France, Sept. 26, 1967, 122,285
Int. Cl. A61k *27/00*
U.S. Cl. 424—91 **9 Claims**

Slow-release adsorbed allergen compositions are prepared by extracting an allergen from a powder which contains it, and adding alumina gel to its aqueous extract. More particularly, the extraction is made by means of a dibasic sodium phosphate solution; the allergen is precipitated by the addition of ammonium sulfate to the solution, it is separated from the solution and then redissolved in water containing dibasic sodium phosphate preferably at a concentration of about 0.05 M to 0.1 M. To the solution thus obtained aluminum hydroxide gel is added and the mixture is throughly stirred to form the stable adsorbed allergen composition.

3,629,401
ANTI-INFLAMMATORY MEDICINAL PREPARATION
David R. Foster, 1409 Gieffers St., Lake Charles, La. 70601
No Drawing. Filed Oct. 3, 1969, Ser. No. 863,703
Int. Cl. A61k *27/00*
U.S. Cl. 424—95 **6 Claims**

This disclosure relates to the discovery of a medicinal preparation extracted from invertebrates of the Annelida phylum by cooking a sealed, glass container of specimen in boiling water for approximately 30 minutes, cooling slightly, and separating the cooked liquid extract by straining. The preparation was found to have an excellent anti-inflammatory effect and is used topically to relieve the symptoms of arthritis and rheumatism and skin irritations such as poison ivy. In severe cases, arthritic symptoms have been alleviated for approximately three weeks while in cases treated prior to bone tissue damage the symptoms have been alleviated for longer periods of time. The preparation has also been used as a skin lotion and is applied drop wise to an affected area and massaged gently into the surface of the skin.

3,629,402
LIPOXAMYCIN AND PROCESS FOR PREPARING SAME
Oldrich K. Sebek, Kalamazoo, and Howard A. Whaley, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Apr. 28, 1969, Ser. No. 819,673
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 **15 Claims**

The lipoxamycin mixture of the subject invention is producible by culturing *Streptomyces virginiae* var. *lipoxae* var. *nova* in an aqueous nutrient medium. Lipoxa-

mycin is the major component of said mixture. The lipoxamycin mixture and lipoxamycin inhibit the growth of *Staphylococcus aureus* and other microorganisms, and can be used to inhibit such microorganisms in various environments.

3,629,403

METHOD OF TREATING ACNE

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Julius Schmid Inc., New York, N.Y.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,994
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 **6 Claims**

A method of treating acne in a male host is described herein, which comprises orally administering an effective dose of a heptaene polyenic macrolide.

3,629,404

ENZYME INHIBITORS 19,042 R.P., 21,052 R.P. AND 21,053 R.P.

Jean Edmond Marie Florent, Paris, Denise Mancy, Charenton, Val-de-Marne, and Jean Verrier, Boulogne-sur-Seine, Hauts-de-Seine, France, assignors to Rhone-Poulenc S.A.

Filed May 2, 1969, Ser. No. 821,277
Claims priority, application France, May 3, 1968, 150,509
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 **9 Claims**

The new enzyme inhibitor 19,042 R.P., and its principal constituents 21,052 R.P. and 21,053 R.P., are produced by aerobically cultivating the microorganism *Streptomyces hygroscopicus* DS 10,408 (NRRL 3286) in an aqueous nutrient medium. The said products also possess antifibrinolytic and anticoagulant activity.

3,629,405

ANTIBIOTICS A4993A AND A4993B AND PROCESS FOR PRODUCING THE ANTIBIOTICS

Robert L. Hamill and Marvin M. Hoehn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 28, 1969, Ser. No. 845,378
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 **6 Claims**

Antibiotics A–4993A and A–4993B, produced by *Streptomyces kentuckensis* strain NRRL 3552 under aerobic conditions in liquid culture medium, isolated from fermentation broth as antibiotic mixture via cationic exchange resin and separated via magnesium silicate or cellulose chromatography and separately purified over sulfuric acid washed alumina have, individually or as mixture, anthelmintic, antibacterial, antifungal and antitrypanosome activity.

3,629,406

SPARSOGENIN AND SPARSOGENIN A AND METHODS OF PREPARATION

Alexander D. Argoudelis, Kalamazoo, Clarence De Boer, Kalamazoo Township, Kalamazoo County, and Thomas E. Eble and Ross R. Herr, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 26, 1961, Ser. No. 147,873
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 **14 Claims**

This invention deals with antibiotics and methods of recovering and purifying them. The substances are sparsogenin having a calculated empirical formula

$$C_{13}H_{21}N_3O_6S_2$$

and sparsogenin A having a calculated formula

$$C_{11}H_{14}O_4N_4$$

3,629,407

DEMETIC ACID AND METHOD OF PRODUCING SAME

Henry Schmitz, Syracuse, and Robert L. DeVault, North Syracuse, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 15, 1965, Ser. No. 496,501
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 **6 Claims**

Demetic acid is a new antibiotic and is produced by the cultivation of *Streptomyces umbrosus* var. *suragaoensis*. Demetic acid inhibits in vitro the growth of certain microorganisms, including bacteria, yeasts, fungi and protozoa.

3,629,408

COMPOSITION OF CHLORINATED GLYCOLURILS AND METALLIC HYPOCHLORITES

Roland J. Horvath, South Euclid, and Charles G. Parsons, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,968
Int. Cl. A61l *13/00*
U.S. Cl. 424—149 **10 Claims**

Compositions of metallic hypochlorites and an additive of a chlorinated glycoluril are presented. These compositions are useful in treating sewage media as the compositions initially eliminate bacteria and prevent regrowth of bacteria in the treated media.

3,629,409

PAIN REMOVING COMPOSITION AND PROCESS FOR PREPARING SAME

Roy Gregory, 1130 N. 14th St., Lafayette, Ind. 47904

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,311
Int. Cl. A61k *27/00*
U.S. Cl. 424—195 **2 Claims**

Pain removing composition for external use on warm blooded animals. The composition is made from critical proportions of acetic acid, urea, ammonium hydroxide, glycerol, plastiquinone A and water. A binder is used to tie the components together. The binder contains lanolin, stearic acid, water, triethanolamine and mineral oil. When rubbed on an external part of an affected area of a warm blooded animal, pain is removed in a short period of time.

3,629,410

ALPHA ADRENERGIC BLOCKING AGENTS

Melvin H. Heiffer, Rockville, Md., and David P. Jacobus, Washington, D.C., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 23, 1969, Ser. No. 827,162
Int. Cl. A61k *27/00*
U.S. Cl. 424—211 **4 Claims**

The disclosure relates to compounds having the following formula:

$$H_2N(CH_2)_mNH(CH_2)_nSY$$

wherein *m* may be the integers 4 through 10 and *n*, 2 through 10, and SY is a sulfur containing function which may be metabolically converted to an —SH group, such as salts of thiols, phosphorothioic acid, thiosulfuric acid, alkyl thioethers, aryl thioethers, aralkyl thioethers and heteryl thioethers. The compounds of this invention are useful agents in blocking alpha-adrenergic mediated responses in animals; and in management of conditions such as hemorrhagic hypotensions, pheochromocytoma, and Raynaud's disease.

3,629,411

FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING O-ALKYL-S,S-DI-ALKYL DITHIOPHOSPHATES

Gerhard Schrader, Wuppertal-Cronenberg, Karl Mannes, Cologne-Stammheim, and Hans Scheinpflug, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Aug. 5, 1966, Ser. No. 570,436, now Patent No. 3,499,951, dated Mar. 10, 1970. Divided and this application July 16, 1969, Ser. No. 868,254

Claims priority, application Germany, Aug. 26, 1965, F 46,992

Int. Cl. A01n *9/36*

U.S. Cl. 424—217 5 Claims

Fungicidal compositions of, and methods of combating fungi using O-(alkyl, alkenyl, alkynyl, and haloalkyl)-S, S-di(phenyl and mono and di-halo, nitro, alkyl and alkoxy substituted-phenyl)-dithiolphosphoric acid triesters.

3,629,412

TOPICAL ANTI-INFLAMMATORY AGENT

Robert H. Silber, Westfield, Kane L. Kelley, Roselle, and Idamae G. Trenner, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,591

Int. Cl. A61k *27/00*

U.S. Cl. 424—232 4 Claims

Methods and compositions for topical application of an indomethacin-methylsalicylate formulation for the treatment of inflammation.

3,629,413

POLYVALENT BOVINE VACCINES AND METHODS OF MAKING AND USING SAME

Isaac L. Shechmeister, Joseph R. Kolar, Jr., and William G. Kamlade, Jr., Carbondale, Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.

Filed Feb. 4, 1970, Ser. No. 8,631

Int. Cl. C12k *5/00*

U.S. Cl. 424—89 18 Claims

A polyvalent vaccine effective in immunization of bovines against infectious bovine rhinotracheitis virus (IBR), bovine viral diarrhea virus (BVD) and parainfluenza-3 virus (PI-3) is composed of a suspension, in a vehicle such as an aqueous solution of formaldehyde suitable for parenteral injection of the three viruses in killed form. The three viruses are separately propagated and separately suspended in aqueous solutions containing 0.4% by volume formalin, and the respective suspensions are maintained at a temperature of about 4° C. for one week. Portions, for example equal portions, of the three suspensions are combined to produce a polyvalent vaccine. An equal volume of an aqueous solution containing from one to five percent weight/volume of a soluble alginate, such as sodium alginate, having certain specified properties may be added to the vaccine as an adjuvant to enhance its effectiveness. Such polyvalent vaccines are adapted for parenteral administration in the vaccination of bovines.

3,629,414

ANTIBACTERIAL AND SYNERGISTIC ANTI-FUNGAL COMPOSITIONS

Assad S. Sawaya, West Haven, and Morris Emmanuel Stolar, Trumbull, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation-in-part of application Ser. No. 700,006, Jan. 24, 1968, which is a continuation-in-part of application Ser. No. 526,384, Feb. 10, 1966. This application May 14, 1969, Ser. No. 824,665

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 2 Claims

Composition and process utilizing a combination of nystatin and an alkyl isoquinolinium salt which combination when used topically shows antibacterial and synergistic antifungal activity.

3,629,415

SUPPRESSION OF REPRODUCTION WITH 3-OXIME AND 3-OXIME ESTERS OF 19-NORTESTOSTERONE

Arvin P. Shroff, Piscataway, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Application Apr. 20, 1967, Ser. No. 635,308, now Patent No. 3,532,689, which is a continuation-in-part of applications Ser. No. 502,384, Oct. 22, 1965, and Ser. No. 563,081, July 6, 1966, now Patent No. 3,437,674. Divided and this application July 18, 1969, Ser. No. 843,201

Int. Cl. A61r *27/00*

U.S. Cl. 424—238 12 Claims

3-oximes and 3-oxime esters of 19-nortestosterones have post-coital activity for the suppression of reproduction.

3,629,416

METHOD OF TREATING OR PREVENTING COCCIDIOSIS WITH THIOSEMICARBAZONE DERIVATIVES

Paul Anthony Barrett, London, England, assignor to Burroughs Wellcome Co.

No Drawing. Original application July 21, 1965, Ser. No. 473,867, now Patent No. 3,478,035, dated Nov. 11, 1969. Divided and this application Mar. 12, 1969, Ser. No. 806,676

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 24 Claims

A method of treating or preventing coccidiosis in an animal which comprises administering to the animal an effective amount of a compound

$$R^1\text{–}C(=N.NH.CS.NH.A.NR^3_2)\text{–}R^2$$

or a pharmaceutically acceptable acid addition salt thereof where R^1 is selected from the class consisting of hydrogen, lower alkyl, cyclohexyl, benzyl, lower alkoxy lower alkyl, acetoxymethyl and phenyl, R^2 is selected from the class consisting of hydrogen, lower alkyl, benzyl and phenyl, A is alkylene having 1 to 8 preferably 1 to 5 carbon atoms and NR^3_2 is selected from the class consisting of dialkylamino, pyrrolidino, piperidino and morpholino.

3,629,417

PROTECTION AGAINST THE GROWTH OF PENICILLIUM

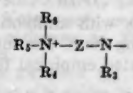
Heinrich Hausermann, Riehen, and Eduard Troxler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application July 23, 1968, Ser. No. 746,746, now Patent No. 3,518,266, dated July 30, 1970. Divided and this application Aug. 25, 1969, Ser. No. 870,846

Int. Cl. A01n *3/00, 9/22*

U.S. Cl. 424—249 6 Claims

Quaternary 3-aryl-7-[triazinyl-(2)-amino] - coumarin salts are disclosed in which the carbon atom in 4-position in the triazinyl nucleus is substituted by a lower alkyl group, an optionally substituted lower alkoxy or lower alkylthio group, or an unsubstituted or organically substituted amino group, and the carbon atom in 6-position in the triazinyl nucleus is substituted by the grouping



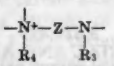
wherein

Z represents an alkylene or oxa-alkylene bridge;

R_3 represents hydrogen or a lower alkyl or alkenyl groups;

R_4, R_5 and R_6 represent certain organic substituents or

R_4 and R_5 together with the nitrogen atom represent certain heterocyclic radicals; or the grouping



may represent a piperazinium radical, and which novel coumarin are useful for protecting foodstuffs and the like against the growth of Penicillium thereon.

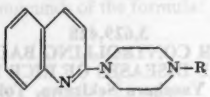
3,629,418

PROCESS FOR PRODUCING AN ANTI-DEPRESSANT EFFECT WITH PIPERAZINE QUINOLINES

Rodolfo Rodriguez, Tlalpan County, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Feb. 14, 1969, Ser. No. 799,508
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 3 Claims

An anti-depressant effect is produced in an organism by administering an anti-depressant effective amount of a compound of the formula:



in which R is a member selected from the group consisting of H and CH_3 and nontoxic pharmacologically acceptable acid addition salts thereof. The compound may be combined with acceptable pharmaceutical vehicles to form compositions for administration.

3,629,419

BACTERICIDAL AND FUNGICIDAL N-[(HALOALKYL)THIO] - 1,2 - PYRIDAZINE-CARBOXIMIDE COMPOSITIONS AND METHODS OF USE

Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Apr. 14, 1967, Ser. No. 632,147, now Patent No. 3,528,978, dated Sept. 15, 1970. Divided and this application June 13, 1969, Ser. No. 834,934
Int. Cl. A01n *9/22*
U.S. Cl. 424—250 14 Claims

Certain new N-[(haloalkyl)thio]-1,2-pyridazinedicarboximides are active against fungi, bacteria, algae, and protozoa. The pyridazine ring may be tetrahydro or 3,6-dihydro. The invention contemplates alkyl substituents of from 1 to 4 carbon atoms in the 3 and 6 positions of the pyridazine ring. The haloalkyl group may be methyl or ethyl with chlorine, bromine or fluorine substitution. The apple scab fungus, *Venturia inaequalis,* and the bean rust fungus, *Uromyces phaseoli,* have been controlled.

3,629,420

COMPOSITIONS AND METHODS FOR CIRCULATORY STIMULATION AND SALURETIC ACTIVITY WHICH EMPLOY 2-METHYL-4-HYDROXY-PYRIDO[2,3-d]-PYRIMIDINE

Wolfgang Schaumann and Karl Dietmann, Mannheim-Waldhof, and Klaus Hardebeck, Ludwigshafen (Rhine), Germany, assignors to Boehringer-Mannheim-GmbH, Mannheim-Waldhof, Germany

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,292
Claims priority, application Germany, Apr. 13, 1968, P 17 67 229.6
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 19 Claims

Pharmaceutical compositions characterized by circulatory stimulating and saluretic activity comprising 2-methyl-4-hydroxy-pyrido-[2,3-d]-pyrimidine in admixture with a pharmaceutical carrier.

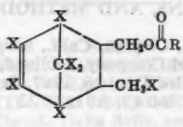
3,629,421

HALOGENATED BICYCLOHEPTENYL COMPOUNDS AS INSECTICIDES

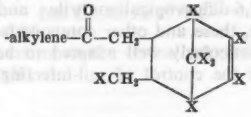
Sheldon B. Greenbaum, Tonawanda, Samuel Gelfand, Niagara Falls, and Edward D. Weil, Yonkers, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Division of application Ser. No. 533,847, Mar. 14, 1966. Continuation-in-part of application Ser. No. 142,514, Oct. 3, 1961. This application Jan. 1, 1969, Ser. No. 807,150
Int. Cl. A01n *9/00, 9/22*
U.S. Cl. 424—263 2 Claims

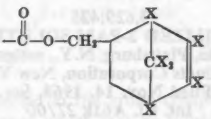
A method of controlling insects is described by applying to the locus of the insects to be treated an insecticidal amount of a composition of the structure



wherein R is selected from the group consisting of alkyl, aryl, heterocyclic



and



and X is a halogen selected from the group consisting of chlorine, fluorine and bromine.

The compounds are prepared by reacting an acyl halide

with 4,5,6,7,8,8 - hexahalo - 3a,4,7,7a - tetrahydro-4,7-methanophthalan in the presence of a Friedel Crafts catalyst.

3,629,422

SOIL FUMIGATION METHOD

Jeffrey D. Griffith, Lafayette, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 843,219, July 18, 1969, which is a continuation-in-part of application Ser. No. 589,813, Oct. 27, 1966. This application Aug. 3, 1970, Ser. No. 60,653
Int. Cl. A01n *9/22*
U.S. Cl. 424—263 6 Claims

The invention relates to agronomic practices and more particularly is concerned with a new method and composition for the fumigation of a plant growth medium which comprises impregnating soil or other growth media with a composition containing a pesticidally effective amount

of a 4-fluoropyridine having fluoro- or chloro- moieties in certain predetermined relationships on the other four carbon atoms of the ring structure.

3,629,423
METHOD OF TREATING HELMINTHIASIS
James W. McFarland, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 560,856, June 27, 1966. This application Oct. 16, 1967, Ser. No. 675,285
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 6 Claims

New 1-(2-arylvinyl) and 1-(2-arylacyl)-pyridinium and α-picolinium salts and their use as anthelmintic agents.

3,629,424
CYANOFLUOROPYRIDINES AND FUNGICIDAL COMPOSITIONS, AND METHODS FOR USING THE SAME
Florence E. Torba, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Dec. 26, 1967, Ser. No. 693,105
Int. Cl. A01n *9/22*
U.S. Cl. 424—263 11 Claims

The present invention is directed to new and novel cyanofluoropyridine compounds and to methods employing and compositions containing those compounds as pesticidal constituents. Representative new compounds are 3,5-dichloro-4,6-difluoropicolinonitrile and tetrafluoropicolinonitrile, these and other compounds of the invention being particularly well adapted to be used as soil fumigants for the control of soil-infecting fungi.

3,629,425
STABILIZED 2-PAM SOLUTIONS
Anwar A. Hussain, Plattsburg, N.Y., assignor to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,911
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 11 Claims

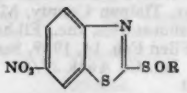
There are disclosed herein concentrated aqueous solutions of 2-PAM salts with mineral acids optionally also containing up to 0.5 percent of atropine, stabilized by addition of mineral acid to a final pH of 1.0 to 3.0. Solutions of 2-PAM salts with or without atropine stabilized in this manner are many times more stable than solutions prepared in the conventional way.

3,629,426
THERAPEUTICAL COMPOSITIONS CONTAINING PIPERIDINE DERIVATIVES
Hans Herbert Kuhnis and Rolf Denss, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 652,040, July 10, 1967, now Patent No. 3,523,949. This application Nov. 25, 1968, Ser. No. 778,844
Claims priority, application Switzerland, July 13, 1966, 10,192/66
Int. Cl. A61k *27/0, 27/12*
U.S. Cl. 424—267 4 Claims

Therapeutical compositions containing 1-substituted 4-allyl-isonipecotinic acid lower alkyl esters or pharmaceutically acceptable acid addition salts thereof, which have useful analgesic and antitussive properties and a method of treating pain as well as a method of producing an antitussive effect, in mammals. Illustrative embodiments are therapeutical compositions containing 1-(3-phenylpropyl)-4-allyl-isonipecotinic acid ethyl ester and 1-n-octyl-4-allyl-isonipecotinic acid ethyl ester.

3,629,427
ANTI-BACTERIAL AND ANTI-FUNGAL TREATMENT WITH SULFOXIDES
Herbert Q. Smith, Malvern, Pa., assignor to Pennwalt Chemicals Corporation, Philadelphia, Pa.
No Drawing. Filed Feb. 6, 1969, Ser. No. 797,244
Int. Cl. A01n *9/12*
U.S. Cl. 424—270 10 Claims

Process of controlling bacteria and fungi with compounds of the structure



where R is an alkyl group containing from 1 to 4 carbon atoms.

3,629,428
PESTICIDE FOR CONTROLLING BACTERIAL AND FUNGAL DISEASES OF RICE PLANT
Shigeo Seki and Yasuharu Sekizawa, Tokyo, Ken Nishibata, Yokosuka-shi, Tetsuro Watanabe and Takahiko Kikuchi, Yokohama-shi, and Hiroshi Igarashi, Chigasaki-shi, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan
No Drawing. Filed Aug. 20, 1968, Ser. No. 753,872
Claims priority, application Japan, Sept. 7, 1967, 42/57,059, 42/57,060; Dec. 16, 1967, 42/80,272, 42/80,273
Int. Cl. A01n *9/12*
U.S. Cl. 424—270 6 Claims

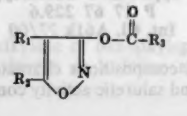
A method for controlling bacterial and fungal diseases of rice plants by applying 3-alkoxy-, 3-alkenyloxy- or 3-alkynloxy-1,2-benzisothiazole-1,1-dioxides to the rice plant.

3,629,429
THIADIAZOLYL UREAS AS SYSTEMIC FUNGICIDES
Patrick R. Driscoll, Spotswood, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Aug. 1, 1969, Ser. No. 846,933
Int. Cl. A01n *9/12, 9/22*
U.S. Cl. 424—270 5 Claims

(Substituted)thio-, such as alkylthio- and alkenylthio-substituted 1,3,4-thiadiazol-2-yl ureas are active systemic fungicides.

3,629,430
ISOXAZOLE FUNGICIDAL COMPOSITIONS AND METHODS OF USE
Yukiyoshi Takahi, Shiga-ken, and Kazuo Tomita and Hidehiko Oka, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
No Drawing. Filed Feb. 10, 1969, Ser. No. 798,160
Claims priority, application Japan, Feb. 13, 1968, 43/9,068
Int. Cl. A01n *9/22, 9/28*
U.S. Cl. 424—272 4 Claims

Agricultural fungicidal compositions which comprise a fungicidally effective amount of an isoxazole derivative having the formula



wherein R^1 is hydrogen atom, a halogen atom or an alkyl group of 1 to 3 carbon atoms; R_2 is hydrogen atom or an alkyl group of 1 to 3 carbon atoms; and R_3 is an alkoxy group of 1 to 5 carbon atoms or an aryl group which contains 6 to 10 carbon atoms, the hydrogen atom on one of more ring carbons of which may be substituted with alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro, halogen or methylenedioxy, and an agriculturally-acceptable carrier. The present fungicidal composition can be utilized for combatting a wide range of pathogenic fungi causing plant diseases, especially those caused by various pathogenic fungi belonging to the genera Fusarium, Pythium, Rhizoctonia, Phytophthora and the like.

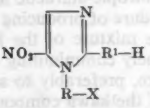
3,629,431

USE OF 1-ALKYLSULFONYLALKYL-2-ALKYL-5 - NITROIMIDAZOLES IN CONTROLLING COCCIDIOSIS

Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed June 16, 1969, Ser. No. 833,730
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **10 Claims**

The use of compounds of the formula:



wherein R and R^1 are each alkylene having 1 to 7 carbon atoms and X is lower alkylsulfonyl, for the control of coccidiosis is described.

3,629,432

ANTIULCEROGENIC COMPOSITION AND METHODS UTILIZING 2 - AMINOETHANETHIOLSULFURIC ACID

Murray Weiner, White Plains, N.Y., assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,754
Int. Cl. A61k *15/12*
U.S. Cl. 424—273 **5 Claims**

2-aminoethanethiolsulfuric acid is antiulcerogenic.

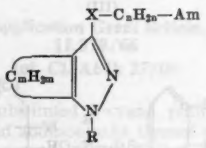
3,629,433

ANTIDEPRESSANT COMPOSITIONS OF CYCLOALKANO[c]PYRAZOLE ETHERS

Heinz Werner Gschwend, Millburn, and Neville Finch, West Orange, N.J., assignors to Ciba Corporation, Summit,, N.J.

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,338
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **2 Claims**

Basic 3-ethers of cycloalkano[c]pyrazoles, e.g. those of the formula



R=aralkyl or aryl
Am=an amino group
X=O or S
m=3–7
n=2–7

actyl derivatives, quaternaries and salts thereof are antidepressants.

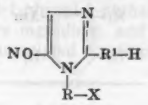
3,629,434

USE OF 1-ALKYLSULFONYLALKYL-2-ALKYL-5 - NITROIMIDAZOLES IN CONTROLLING AMEBIASIS

Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed June 16, 1969, Ser. No. 833,731
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **5 Claims**

The use of compounds of the formula:



wherein R and R^1 are each alkylene having 1 to 7 carbon atoms and X is lower alkylsulfonyl, for the control of amebiasis is described.

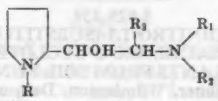
3,629,435

PHARMACEUTICAL COMPOSITIONS ACTING ON THE CENTRAL NERVOUS SYSTEM CONTAINING DISUBSTITUTED AMINOETHANOLS

Uberto Teotino, Davide Della Bella, and Vittorio Ferrari, Milan, Italy, assignors to Whitefin Holdings S.A., Lugano, Switzerland

Continuation-in-part of application Ser. No. 636,649, May 8, 1967. This application Aug. 8, 1969, Ser. No. 848,677
Int. Cl. A61u *27/00*
U.S. Cl. 424—274 **5 Claims**

Compounds acting on the central nervous system, having the formula:



wherein R is selected in the group comprising alkyl, aryl and arylalkyl groups which may be substituted by at least one radical selected in the group comprising halogen atoms, alkyl, hydroxy, alkoxy, trifluoromethyl, nitro, amino, mono- or di-alkylamino radicals; R_1 is selected in the group comprising alkyl and cycloalkyl radicals; R_2 is an alkyl, or taken together with R_1 and the nitrogen atom to which they are attached is a heterocyclic ring which may include a further hetero atom; R_3 is selected in the group comprising a hydrogen atom and alkyl radicals and their salts with organic and inorganic acids and alkyl halides.

3,629,436

CONCENTRATED CARBAMATE PESTICIDE WETTABLE POWDER FORMULATIONS

David A. Pearce, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Oct. 4, 1968, Ser. No. 765,022
Int. Cl. A01n *9/12*
U.S. Cl. 424—275 **1 Claim**

Wettable powders comprise at least 75 weight percent carbamate pesticide, carriers (talc, SiO_2), and as necessary adjuvants a combination of (1) 1–3 weight percent sodium lignosulfonate and (2) 1–5 weight percent of a mixture of equal parts of an alkylphenol-ethylene oxide condensation product (20–40 moles ethylene oxide per mole phenol), and sucrose monolaurate. These powders are compatible with organophosphorus emulsifiable concentrates, such as Methyl Parathion.

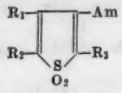
3,629,437

COCCIDIOSTATIC COMPOSITION CONTAINING THIOPHENE-1,1-DIOXIDES

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Springfield, N.J., assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Oct. 8, 1968, Ser. No. 765,974
Int. Cl. A61k 27/00
U.S. Cl. 424—275 3 Claims

3-amino-2,4-diaryl-thiophene-1,1-dioxides, e.g. those of the formula



Am=tert. amino
R_1=H or alkyl
$R_{2,3}$=iso- or heterocyclic aryl are antiparasitic agents.

3,629,438

BENZOTHIOPHENE-1,1-DIOXIDE DERIVATIVES AS FUNGICIDES AND BACTERICIDES

Bogislav von Schmeling, Hamden, and Robert A. Davis, Cheshire, Conn., and Douglas I. Relyea, Pompton Plains, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,562
Int. Cl. A01n 9/14
U.S. Cl. 424—275 6 Claims

Benzothiophene - 1,1 - dioxide derivatives have been found to be effective fungicidal and bactericidal compounds. Included in the scope of pathogens which are inhibited or destroyed by these compounds are fungi and bacteria which cause plant disease and textile rotting, and, as well, fungi and bacteria which exhibit mammalian pathogenicity.

3,629,439

USE OF 2,5-DINITRO-1,1-(SUBSTITUTED)-DIOXY-2,3,4,5 - TETRACHLORO-3-CYCLOPENTENES TO PROTECT PLANTS FROM SOIL FUNGI

Richard M. Scribner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 536,989, Mar. 24, 1966. This application Jan. 13, 1970, Ser. No. 2,648
Int. Cl. A01n 9/20, 9/24, 9/28
U.S. Cl. 424—278 9 Claims

A method of controlling soil fungi with 2,5-dinitro-1,1-(substituted)-dioxy - 2,3,4,5 - tetrachloro - 3 - cyclopentenes and plant protectant compositions containing these cyclopentenes in combination with surfactants.

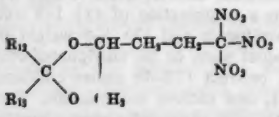
3,629,440

PROCESS FOR CONTROLLING FUNGI

Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Continuation-in-part of application Ser. No. 487,942, May 20, 1965, which is a division of application Ser. No. 326,286, Nov. 26, 1963. This application Aug. 28, 1969, Ser. No. 853,930
Int. Cl. A01n 9/28
U.S. Cl. 424—278 2 Claims

A process for controlling the growth of fungus comprising treating the fungus with an effective amount of the compound of the formula:



wherein R_{12} is lower alkyl.

3,629,441

COMPOSITIONS CONTAINING PHYSIOLOGICALLY ACTIVE KAWA COMPOUNDS, PROCESS OF MAKING SAME, AND METHOD OF USING SAME IN THERAPY

Hans Braeuer, Vaterstetten, near Munich, and Hans Brinkhoff, Munich, Germany, assignors to Spezialchemie Gesellschaft mit beschrankter Haftung und Co., Arzneimittelfabrik, Munich, Germany

No Drawing. Filed June 4, 1968, Ser. No. 734,218
Claims priority, application Germany, June 5, 1967, S 110,180
Int. Cl. A61k 27/14
U.S. Cl. 424—279 16 Claims

Compositions comprising solutions of at least two and preferably two or three physiologically active kawa compounds dissolved in solvents of the type of saturated and unsaturated vegetable and animal oils, polyglycols and their derivatives, 2,2-dimethyl-4-hydroxy methyl-1,3-dioxolane, dimethyl sulfoxide and other solvents which are compatible with said kawa compounds and are stable and do not decompose or polymerize even on prolonged storage. The preferred kawa compounds in said solutions are yangonin, kawain, dihydrokawain, dehydrokawain. Methysticin is excluded since it causes undesirable side effects. Highly concentrated solutions of said kawa compounds of a surprisingly high endo-anesthetic, muscle relaxant, sleep-inducing, and psychotropic-ataractic activity are obtained. The preferred procedure of producing such solutions comprises dissolving the mixture of the kawa compounds in the solvent while finely comminuting and heating the solvent and the mixture, preferably to a temperature above the melting point of the kawa compound with the highest melting point. Preferred mixtures are those of yangonin and kawain or of yangonin, kawain and dihydrokawain.

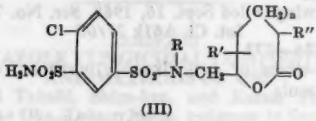
3,629,442

SULPHONAMIDES FOR TREATING HYPERTENSION

Harald Horstmann, Wuppertal-Vohwinkel, and Hartmund Wollweber and Karl Meng, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

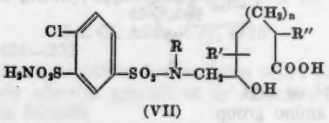
No Drawing. Original application June 6, 1967, Ser. No. 643,822, now Patent No. 3,499,005, dated Mar. 3, 1970. Divided and this application May 29, 1969, Ser. No. 829,123
Claims priority, application Germany, June 16, 1966, F 49,487
Int. Cl. A61k 27/00
U.S. Cl. 424—279 10 Claims

Pharmaceutical compositions are produced which comprise a compound of the formula:



(III)

or



(VII)

wherein:

R is hydrogen or methyl;
R′ is hydrogen or lower alkyl.
R″ is hydrogen or lower alkyl; and
n is 0 or 1;

or a pharmaceutically acceptable non-toxic salt thereof, in combination with a pharmaceutically acceptable inert diluent or carrier. These compositions are useful for their saluretic effect and are useful in treating edema and hypertension.

3,629,443

THERAPEUTIC COMPOSITION CONTAINING A MANDELAMIDINE DERIVATIVE

Louis Lafon, Paris, France, assignor to Societe anonyme dite: Orsymonde, Paris, France

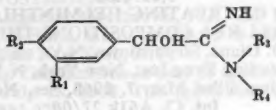
No Drawing. Continuation-in-part of application Ser. No. 778,315, Nov. 22, 1968. This application Apr. 23, 1970, Ser. No. 31, 366

Claims priority, application Great Britain, Nov. 29, 1967, 54,430/67; July 22, 1968, 34,947/68; France, Apr. 23, 1969, 12,850

Int. Cl. A61k *27/00*

U.S. Cl. 424—282 **3 Claims**

This invention relates to a therapeutical composition containing in association with an inert carrier at least one compound of the mandelamidine series and their non toxic acid addition salts as active ingredient, said compound corresponding to the following formula:



in which R_1 and R_2 are the same or different and each represents a hydrogen atom, an OH group or a C_1–C_3 alkoxy group, or R_1 and R_2 when connected together represent a 3,4-dioxyalkylene group having from 1 to 3 carbon atoms; R_3 represents a hydrogen atom, a straight or branched C_1–C_3 alkyl radical or a phenyl group; and R_4 represents an OH group or C_2–C_3 alkyl radical or phenyl group, R_4 being capable of representing a hydrogen atom or a methyl radical when neither R_1 nor R_2 are hydrogen atoms.

3,629,444

ANTIDEPRESSANT COMPOSITIONS AND METHOD OF TREATING

Povl V. Petersen, Virum, Niels Lassen, Gentofte, and Jes Hjortkjaer, Hvidovre, Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

No Drawing. Continuation-in-part of application Ser. No. 622,035, Mar. 10, 1967. This application Jan. 15, 1970, Ser. No. 3,222

Claims priority, application Great Britain, Mar. 17, 1966, 11,870/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 **20 Claims**

Amino alkyl-substituted 3-cyano phthalanes and the corresponding acid addition salts thereof are prepared by reacting the corresponding amino-alkyl-substituted 3-hydroxy-phthalane with an alkali metal cyanide. Additional derivatives of these compounds are prepared by further conversion of the 3-cyano group of the compound. The prepared compounds are useful for the treatment of endogenous depressions in living animals and are administered as compositions comprising the active ingredient and a suitable pharmaceutical carrier.

3,629,445

METHOD OF PREVENTING EXCESSIVE SECRETION OF HYDROCHLORIC ACID

Wilbur Lippmann, Montreal, Quebec, Canada, assignor to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

No Drawing. Filed May 21, 1969, Ser. No. 826,657

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 **5 Claims**

Compositions for preventing hyperchlorhydria containing N,3,3,-trimethyl-1-phenyl-1-phthalanpropylamine hydrochloride as active ingredient, and method of treating said condition and associated conditions.

3,629,446

METHOD OF COMBATTING FUNGIC OF GENUS USTILAGO

Paul-Ernst Frohberger, Leverkusen, Engelbert Kuhle, Bergisch-Gladbach, Germany, and Otto Ewald Urbschat, deceased, late of Cologne-Mulheim, by Gertrud Emma Marig Gerda Urbschat, heiress, Cologne-Mulheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,889

Claims priority, application Germany, Jan. 15, 1968, P 16 67 975

Int. Cl. A01n *9/00*

U.S. Cl. 424—289 **4 Claims**

Fungicidal compositions (especially seed dressings) of and methods of combating fungi using certain benzohydroxamic acid salts, i.e. benzohydroxamic acid alkali metal, alkaline earth metal, heavy metal, ammonium and alkylammonium salts, some of which are known, which possess fungicidal properties and which may be produced by conventional methods.

3,629,447

SCAB FUNGUS CONTROL

John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,902

Int. Cl. A01n *9/00, 9/12*

U.S. Cl. 424—300 **5 Claims**

Control of the scab fungus, *Venturia inaequalis*, employing a lower alkyl 3-(5-chlorosalicylidene)dithiocarbazate.

3,629,448

NEMATOCIDES

Joseph W. Baker, Kirkwood, and Robert K. Howe, Bridgeton, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 681,578, Nov. 8, 1967. This application Dec. 4, 1969, Ser. No. 882,328

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 **7 Claims**

Nematocidal usage of 3,5-di(trifluoromethyl)anilinomethylenemalononitriles

---

3,629,449

PROCESS OF COMBATTING HYPERCHOLESTEROLEMIA

Majid Siddiqi and Zafarul Hasan Beg, % Aligarh Muslim University, Aligarh, Uttar Pradesh, India

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,233

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **4 Claims**

Hypercholesterolemic and hyperlipemic conditions in warm-blooded animals are prevented and/or corrected

by the administration of 3-hydroxy-3-methylglutaric acid. Various administrative routes are possible, but oral is preferred, and a dosage level within the range of 1 milligram to about 100 milligrams per day per kilogram of body weight, in divided portions. Administration in accordance with the invention has been found to reduce the level of liver cholesterol as well.

3,629,450

O-(SUBSTITUTED BENZAMIDO) PHENYLACETIC ACIDS AS ANTI-INFLAMMATORY AGENTS

Norbert Gruenfeld, Bronx, and Jan W. F. Wasley, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application May 27, 1969, Ser. No. 828,344, now Patent No. 3,536,753, which is a continuation-in-part of applications Ser. No. 612,310, Jan. 30, 1967, and Ser. No. 693,143, Dec. 26, 1967, application Ser. No. 693,143, being a continuation-in-part of application Ser. No. 612,310. Divided and this application Jan. 16, 1970, Ser. No. 8,147

Int. Cl. A01n *9/20;* A61k *15/12, 27/00*

U.S. Cl. 424—319 12 Claims

Phenylacetic acid derivatives having a p-substituted benzamido group in the o-position are anti-inflammatory agents. An illustrative embodiment in o-(p-chlorobenzamido)-phenylacetic acid.

3,629,451

METHOD OF TREATING BACTERIAL INFECTIONS

Elton S. Cook and Kinji Tanaka, Cincinnati, Ohio, assignors to Stanley Drug Products, Inc., Portland, Oreg.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,947

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 5 Claims

A variety of substances are reported which claim to induce host resistance to coccic infections, none have proven sufficiently effective to warrant their wide spread use. Anti-infectious agents have been found which are effective in inducing resistance to infections due to cocci.

3,629,452

METHOD OF REDUCING EXCESSIVE SECRETIONS OF SEBUM BY ORAL ADMINISTRATION OF AMINO ACID DERIVATIVES

Gregoire Kalopissis and Georges Manoussos, Paris, France, assignors to L'Oreal, Paris, France

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,652

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 2 Claims

A treatment for seborrhea in which certain cysteamine compounds, such as S-carboxymethyl cysteamine hydrochloride and S-benzyl cysteamine hydrochloride, are orally administered, preferably in the form of their acid salts.

3,629,453

COMPOSITIONS AND METHODS FOR REDUCING SERUM CHOLESTEROL AND ESTERIFIED FATTY ACIDS

Wilson Shaw Waring, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Aug. 28, 1964, Ser. No. 392,945, now Patent No. 3,392,194, dated July 9, 1968. Divided and this application Feb. 23, 1968, Ser. No. 726,629

Claims priority, application Great Britain, Sept. 19, 1963, 36,911/63

Int.Cl. A61k *27/00;* A01n *9/20*

U.S. Cl. 424—320 16 Claims

A method of reducing abnormally high concentrations of serum cholesterol and esterified fatty acids, and a method of producing sedation, which involve the administration of an effective amount of a pharmaceutical composition which contains as active ingredient at least one aryloxyisobutyric acid amide, for example α(4-chlorophenoxy)isobutyramide. Pharmaceutical compositions suitable for use in these methods are also disclosed.

3,629,454

AN ANTIFUNGAL AND ANTIBACTERIAL COMPOSITION

Fred S. Barr and Charles F. Bullock, Bristol, Va., and Galen F. Collins, Bristol, Tenn., assignors to The S. E. Massengill Company, Bristol, Tenn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 296,359, July 19, 1963. This application June 4, 1968, Ser. No. 734,207

Int. Cl. A01n *9/02;* A61k *27/00*

U.S. Cl. 424—320 7 Claims

This invention relates to new and synergistic antimicrobial compositions which comprise the diethanolamide of a higher saturated fatty acid, e.g. lauric diethanolamide, which itself has substantially no antimicrobial activity, plus a known antimicrobial agent such as sodium bithionolate, a resulting composition being much more effective than either of the components alone or the expected additive effect of the components.

3,629,455

METHOD OF TREATING HELMINTHIASIS AND IMIDOYLUREA COMPOSITIONS THEREFOR

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Mar. 7, 1968, Ser. No. 711,235

Int. Cl. A61k *27/00*

U.S. Cl. 424—322 6 Claims

Hookworms and tapeworms are eliminated from warm blooded animals by the use of 1-phenyl-3-alkanimidoylureas.

3,629,456

BENZOHYDROXAMIC ACID FUNGITOXIC AGENTS

Ewald Urbschat, Cologne-Mulheim, and Paul-Ernst Frohberger Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 438,369, Mar. 9, 1965. This application July 26, 1968, Ser. No. 749,915

Claims priority, application Germany, Mar. 12, 1964, F 42,283

Int. Cl. A01n *9/20*

U.S. Cl. 424—324 6 Claims

Benzo-, bis-benzo-, and mono- and di-chloro benzo- and bis-benzo- -hydroxamic acids, and compositions thereof with dispersible carrier vehicles, having fungitoxic activity and usable to combat fungi, especially Ustilago phytopathogenic fungi, in connection with seeds, plants and tillable agricultural soil.

3,629,457

FUNGICIDAL COMPOSITIONS CONTAINING 2,2'-BIS(ALLYL-CARBAMYLPHENYL)-DISULFIDE

John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,957

Int. Cl. A01n *9/12*

U.S. Cl. 424—324 3 Claims

Bis(allylcarbamylphenyl)-disulfide is found effective in controlling mildew fungi, especially *Pullularia pullulans* and can be incorporated in organic coating compositions. About 0.1 to 1% concentration in paint provides protection against mildew.

3,629,458

FUNGICIDAL METHODS AND COMPOSITIONS COMPRISING TRICHLOROACETALDEHYDE AMINALS

Hugo Malz, Leverkusen, Ferdinand Grewe, Burscheid, August Dorken, Wuppertal-Sonnborn, and Helmut Kaspers, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application July 11, 1967, Ser. No. 652,410, now Patent No. 3,520,927, dated July 21, 1970. Divided and this application June 24, 1969, Ser. No. 845,118

Claims priority, application Germany, July 14, 1966, F 49,691

Int. Cl. A01n *9/00, 9/20*

U.S. Cl. 424—324 11 Claims

N-(unsubstituted and halogen, alkoxy and/or alkylmercapto substituted-alkyl and -cycloalkyl as well as unsubstituted and halogen, alkyl, alkoxy, alkylmercapto, nitro, dialkylamino, cyano and/or aryloxy substituted-phenyl and -naphthyl)-N′-formyl - trichloroacetaldehyde aminals which possess fungicidal properties and which may be produced by reacting the corresponding isocyanates with N-(1-hydroxy-2,2,2-trichloro-ethyl)-formamide.

3,629,459

N-(3,4-DICHLOROPHENYL)-3-(N′-3,4-DICHLOROPHENYL)CARBAMOYL METHYL-2,2-DIMETHYLCYCLOBUTANECARBOXAMIDE CHEMOSTERILANT

Theodore Largman, Morristown, N.J., and Peter Edward Newallis, Jackson, Kans., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 745,664, July 18, 1968. This application Dec. 3, 1969, Ser. No. 881,920

Int. Cl. A01n *9/20*

U.S. Cl. 424—324 4 Claims

N-(3,4-dichlorophenyl) - 3 - [N′-3,4-dichlorophenyl) carbamoyl]methyl - 2,2 - dimethylcyclobutanecarboxamide is prepared by reaction of 3,4-dichloroaniline with pinic acid chloride in the presence of base. The product is useful as a chemosterilant for insects, birds, and mammals.

3,629,460

METHOD OF COMBATING COTTON PESTS

Volker Dittrich, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 564,553, July 12, 1966. This application Sept. 24, 1969, Ser. No. 860,840

Int. Cl. A01n *9/20*

U.S. Cl. 424—326 4 Claims

There is provided a novel process for protecting cotton plants from attack by insects harmful to cotton by applying to said plants an insecticidally effective amount of N-(2-methyl-4-chlorophenyl)-N′-dimethylformamidine.

3,629,461

SPASMOLYTIC COMPOSITIONS AND THE USE THEREOF WITH N - (ALKANOYLPHENOXYALKYL)-N,N,N-TRIALKY AMMONIUM SALTS

Pierre H. Payot, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 15, 1968, Ser. No. 776,245

Claims priority, application Switzerland, Nov. 29, 1967, 16,787/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—329 11 Claims

N-(alkanoylphenoxyalkyl)-N,N,N-trialkyl ammonium salts are the active ingredients of pharmaceutical compositions; these compounds and compositions are useful for the treatment of cramps; an illustrative embodiment is N - [2 - (2 - acetylphenoxy) - ethyl] - N, N- dimethyl-N-dodecyl ammonium bromide.

3,629,462

QUATERNARY AMMONIUM COMPOUNDS

Reginald L. Wakeman, Philadelphia, Pa., and Alfonso N. Petrocci, Glen Rock, and Kenneth W. Prodo, Westfield, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,506

Int. Cl. A16l *13/00*

U.S. Cl. 424—329 3 Claims

A synergistic mixture of higher alkyl dimethyl pseudocuminyl ammonium chlorides wherein the alkyl group contains from 12 to 14 carbon atoms, and wherein the microbiocidal effectiveness of the mixture in hard water is that of the compound in the mixture which has the greatest hard water tolerance.

3,629,463

PHARMACEUTICAL COMPOSITIONS CONTAINING N-CYCLOPROPYL-1-AMINO-1,2,3,4-TETRAHYDRONAPHTHALENES AND USE OF SUCH N-CYCLOPROPYL COMPOUNDS AS HYPOTENSIVES

Maurice Ward Gittos, Slough, John William James, Langley, and Leslie Frederick Wiggins, Wargrave, England, assignors to Aspro-Nicholas Limited, London, England

No Drawing. Application July 10, 1967, Ser. No. 652,029, which is a continuation-in-part of application Ser. No. 623,470, Mar. 15, 1967, which in turn is a continuation-in-part of application Ser. No. 385,761, July 28, 1964. Divided and this application Apr. 15, 1969, Ser. No. 835,841

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 9 Claims

A number of N-cyclopropyl-1-aminoindanes and -1-amino-1,2,3,4-tetrahydronaphthalenes are disclosed. They have useful pharmacological properties in that, when administered to hypertensive animals, including humans, they lower the blood pressure of these animals. Pharmaceutical compositions containing these compounds may be administered orally, rectally or parenternally in dosage unit form, each dosage unit containing from 1 to 150 mg. of active ingredient. Up to 2 or 3 dosage units may be administered 4 times daily. Reduced dosages may be used for maintenance therapy.

3,629,464

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS COMPRISING CERTAIN ALIPHATIC MONO OR DIALDEHYDES AND AN ALIPHATIC NITRO-ALCOHOL

Heinz Günter Nosler, Monheim, Rhineland, Horst Bellinger, Dusseldorf, and Richard Wessendorf, Hilden, Rhineland, Germany, assignors to Henkel & Cie, G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,835

Claims priority, application Germany, Aug. 19, 1967, H 63,652

Int. Cl. A01n *9/24*

U.S. Cl. 424—334 9 Claims

Synergistic antimicrobic compositions of lower aliphatic mono and polyaldehydes and an aliphatic alcohol having 2 to 5 carbon atoms in a straight chain and substituted with at least one nitro group and a method of killing fungi and bacteria.

3,629,465

PRESERVATIVES FOR AQUEOUS SYSTEMS

Milton Manowitz, Fair Lawn, N.J., George R. Walter, Racine, Wis., and Stephen A. Foris, Toms River, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Continuation-in-part of application 573,845, Aug. 22, 1966. This application Dec. 23, 1968, Ser. No. 786,453

Int. Cl. A01n *9/20;* C02b *3/08;* C09d *5/14*

U.S. Cl. 424—349 6 Claims

The use of (1,2-dibromo-2-nitroethyl) benzene (I) and β-bromo-β-nitrostyrene (II) as preservatives for

aqueous systems normally subject to spoilage is disclosed. Examples showing results obtained in preserving cutting oils, cosmetic lotions and creams, fuel oil, latex emulsions, paints, industrial cooling water, water used in pulp and paper manufacturing, flood water used in secondary oil recovery, and starch-base adhesives are given.

3,629,466
SYNERGISTIC MIXTURES CONTAINING PENTACHLOROPHENOL

Bruno Sander, Ludwigshafen, Ernst-Heinrich Pommer, Limburgerhof, and Werner Helmut Clad and Otto Wittmann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,366
Claims priority, application Germany, Feb. 3, 1968, P 16 67 937.1
Int. Cl. A01n *9/20*
U.S. Cl. 424—325 **4 Claims**

A new mixture of

(a) pentachlorophenol or its salt and
(b) the salt of an N-nitroso-N-organylhydroxylamine which has valuable and new properties, and a process for controlling fungi with this mixture. The mixture has a strong fungicidal action and is particularly suited for the prevention of fungus infections.

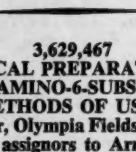
3,629,467
PHARMACEUTICAL PREPARATIONS CONTAINING A 2,4-DIAMINO-6-SUBSTITUTED-S-TRIAZINE AND METHODS OF USING SAME

Charles D. Bossinger, Olympia Fields, and Takashi Enkoji, Park Forest, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,364
Int. Cl. A61u *27/00*
U.S. Cl. 424—249 **20 Claims**

Preparations containing 2,4-diamino - 6 - substituted-s-triazines and methods of using same whereby a host, including man, to whom such preparations are administered, preferably per os, is caused to secrete endogenous adrenocorticotropic hormone which increases the blood levels of endogenous adrenocotricosteroids in the host to his benefit while avoiding the adverse effects of hyperadrenocorticosteroidism. The methods hereof also obtain anti-inflammatory relief in the host independently of adrenal axis stimulation.

The triazine compounds have the structure:



wherein R is a phenyl or substituted phenyl in which the substituted moiety is selected from the group consisting of halo, alkyl, alkoxy, and fluoroalkyl.

3,629,468
HYGROSCOPICALLY CONTROLLED EFFERVESCENT MOUTHWASH TABLET

Howard P. Andersen, 419 E. Summit Ave., Oconomowoc, Wis. 53066

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,099
Int. Cl. A61k *9/00, 11/02, 11/04*
U.S. Cl. 424—44 **12 Claims**

An effervescent mouthwash tablet comprising a germicidal agent, chlorophyll, an alkali metal carbonate salt, adipic acid, flavoring ingredients, and sweetening agents.

3,629,469
METHOD FOR CONTROLLING BIRDS

Philip H. Derse, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,497
Int. Cl. A01n *17/00*
U.S. Cl. 424—17 **1 Claim**

A method for controlling bird population by feeding birds in a locale with a food composition containing antimycin as the toxic agent.

3,629,470
PROCESS FOR PURIFICATION OF ANIMAL RNA VIRUSES

Alexander David Kanarek and George William Tribe, London, England, assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,675
Int. Cl. A61k *27/00*
U.S. Cl. 424—89 **13 Claims**

A process for the purification or concentration of animal RNA viruses of the myxovirus or paramyxovirus group or the respiratory syncytial or rubella viruses which includes the steps of precipitating the virus from solution by means of a water soluble polyalkylene glycol in the presence of an electrolyte having a particular concentration in a substantially neutral medium and separating the precipitate containing the virus.

3,629,471
TRANQUILIZING COMPOSITIONS AND METHODS

Albert Fanchamps, Basel, and Max Taeschler, Reinach Basel Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Jan. 7, 1969, Ser. No. 789,621
Claims priority, application Switzerland, Jan. 16, 1968, 647/68
Int. Cl. A61k *27/00*
U.S. Cl. 424—247 **6 Claims**

The invention relates to a pharmaceutical composition incorporating as active ingredients:

(a) N-ethyl-nortropin-benzhydryl ether or a pharmaceutically acceptable acid addition salt thereof;
(b) dihydroergocristine or a pharmaceutically acceptable acid addition salt thereof; and
(c) 3 - methylsulphinyl - 10 - [2-(1-methyl-2-piperidyl) ethyl]phenothiazine or a pharmaceutically acceptable acid addition salt thereof; in which the proportion, by weight, of ingredient (*a*):(*b*):(*c*) is from about 1:0.25:1.5: to about 1:20:125.

The composition is useful as a minor tranquilizer.

3,629,472
BACTERICIDAL COMPOSITIONS CONTAINING SUBSTITUTED NITROPYRIDINES

Patrick R. Driscoll, Fords, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed July 10, 1968, Ser. No. 743,608
Int. Cl. A01n *9/22*
U.S. Cl. 424—263 **4 Claims**

Compositions of substituted 2-halo-5-nitropyridines on a carrier therefor are effective in combatting plant bacteria.

3,629,473

ANTI-INFLAMMATORY AGENTS AND COMPOSITIONS

Karl J. Doebel, Ossining, N.Y., and André R. Gagneux, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 721,928, and Ser. No. 721,929, both Apr. 17, 1968, which are continuations-in-part of application Ser. No. 500,245, Oct. 21, 1965. This application Nov. 7, 1969, Ser. No. 874,947

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **12 Claims**

A method and compositions for producing anti-inflammatory effects in warm-blooded animals by administration of an effective amount of a derivative of pyridyl-2-mercaptoimidazole, such as, for example, 1-(2-pyridyl)-5-methyl-2-mercaptoimidazole.

3,629,474

INSECTICIDAL AND FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI AND INSECTS USING ISOXAZOLYL CARBAMATES

Ranajit Ghosh and Nigel Douglas Bishop, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,223

Claims priority, application Great Britain, Dec. 4, 1967, 55,058/67; Feb. 20, 1968, 8,259/68

Int. Cl. A01n *9/22, 9/28*

U.S. Cl. 424—272 **5 Claims**

Isoxazolyl carbamates and pesticidal compositions containing them. A typical carbamate is 4,5-dimethyl-3-isoxazolyl dimethylcarbamate.

3,629,475

METHOD OF INHIBITING PHENYLETHANOLAMINE-N-METHYLTRANSFERASE

Lewis R. Mandel, Edison, N.J., and Curt C. Porter, Glenside, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 8,698, Feb. 4, 1970. This application Aug. 3, 1970, Ser. No. 60,603

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **1 Claim**

Method of inhibiting phenylethanolamine-N-methyl transferase by the administration to a host of 2-aminobenzimidazoles and pharmaceutical compositions containing the 2-aminobenzimidazoles of this invention as an active ingredient.

3,629,476

CONTROLLING SOIL-DWELLING FUNGI WITH PHENARSAZINE COMPOUNDS

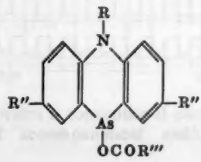
John P. Pellegrini, Jr., O'Hara Township, Allegheny County, and Harold O. Strange, Penn Hills Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Original application Dec. 30, 1965, Ser. No. 517,808, now Patent No. 3,481,958, dated Dec. 2, 1969. Divided and this application Apr. 1, 1969, Ser. No. 812,342

Int. Cl. A01n *9/00*

U.S. Cl. 424—297 **8 Claims**

Soil-dwelling fungi are controlled by impregnating the soil with a phenarsazine compound represented by the general formula



Preferred compounds are those wherein R and R'' are hydrogen and R''' is selected from the group consisting of alkyl and alkenyl radicals containing 3 to 9 carbon atoms, phenyl, hydroxyphenyl, alkylphenyl and phenalkyl radicals the alkyl portions of said alkylphenyl and phenalkyl radicals containing 1 to 2 carbon atoms. Especially preferred is 5,10-dihydrophenarsazine-10-isooctanoate.

3,629,477

HALOGENATED DIPHENYETHER-CONTAINING COMPOSITIONS AND CONTROL OF PESTS THEREWITH

Ernst Model, Basel, and Jakob Bindler, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 570,742, Aug. 8, 1966, which is a continuation-in-part of application Ser. No. 345,080, Feb. 17, 1964. This application Apr. 3, 1967, Ser. No. 627,603

Int. Cl. A01n *9/24;* **A61k** *27/00*

U.S. Cl. 424—340 **16 Claims**

Halogenated 2-hydroxy or 2-acyloxy-diphenylether-containing compositions which inhibit microbial growth and are suitable for disinfection and the like purposes, and especially those containing 2-hydroxy-diphenylethers or 2-acyloxy-diphenylethers substituted at least in 4-position and preferably in 4- and 4'-position by halogen, which are particularly suitable for the protection of cellulosic materials against bacteria and fungi, for the treatment of infections of the intestinal system and the urinal tract of warm-blooded animals caused by pathogenic microorganisms, and the protection of polyamide fiber materials against attack by certain insects; furthermore processes of using the aforesaid compositions for the described purposes.

3,629,478

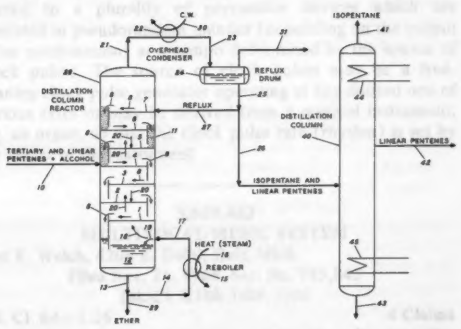
SEPARATION OF LINEAR OLEFINS FROM TERTIARY OLEFINS

Willard M. Haunschild, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 22, 1969, Ser. No. 852,227

Int. Cl. C07c *11/12*

U.S. Cl. 260—677 A **7 Claims**



Linear pentenes are separated from tertiary pentenes by:

(a) Feeding a mixture of alcohol, tertiary pentenes and linear pentenes to a distillation column reactor at a feed zone;

(b) Catalytically reacting the tertiary pentenes with the alcohol by contacting them with heterogeneous catalyst located in a plurality of zones above the feed zone, thereby forming an ether;

(c) Fractionating the ether from the linear pentene in the distillation column reactor;

(d) Withdrawing the ether from the distillation column reactor at a position below the feed zone; and

(e) Withdrawing the linear pentenes from the distillation column reactor at a position above the feed zone.

3,629,479

SULFOALKYLATED POLYBENZIMIDAZOLES

Jeno C. Szita, Stamford, Conn., and Carl S. Marvel, Tucson, Ariz., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,986
Int. Cl. C08g *33/02*; D06p *5/00*
U.S. Cl. 260—79.3 R 3 Claims

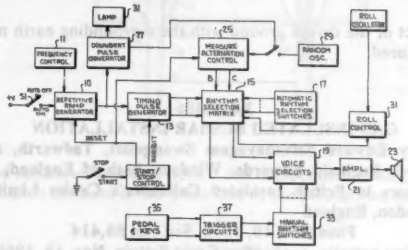
Polybenzimidazoles are sulfoalkylated by reaction with propane- and butanesultones. The sulfoalkylated products, unlike the parent polymers, are receptive to dyeing with cationic dyestuffs.

ELECTRICAL

3,629,480
RHYTHMIC ACCOMPANIMENT SYSTEM EMPLOYING RANDOMNESS IN RHYTHM GENERATION

Michael R. Harris, Hayward, Calif., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Apr. 10, 1970, Ser. No. 27,258
Int. Cl. G10f *1/00*
U.S. Cl. 84—1.03 **31 Claims**

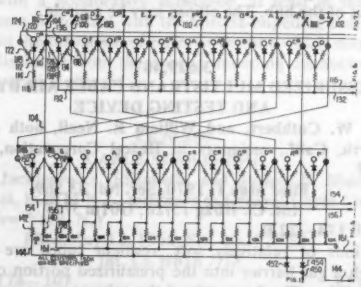


A system is disclosed for developing rhythmic accompaniment sounds from a free running repetitive ramp waveform having a controllable repetition rate, there being a series of master timing pulses developed by triggering appropriate circuits at different ramp voltage levels during each ramp cycle. Certain of the master timing pulses are selected to form each required rhythmic pattern, the selected pulses being employed to trigger voice circuits to produce desired tones. In one embodiment a pattern selection circuit is employed to permit selective generation of any one of four pattern modes, namely: a first continuously repeated pattern; a second continuously repeated pattern; a pattern in which the first and second patterns are alternated; and a pattern in which the first and second patterns are randomly selected. In the preferred embodiment, 13 master timing pulses are provided during each measure and are separated by 1, 2, or 3 timing units in a 24 timing unit measure, an arrangement which permits of obtaining authentic accompaniment rhythms. A novel cowbell voicing circuit and a novel drum roll control circuit permit rhythmic generation of realistic cowbell and drum roll sounds in response to selected master timing pulses.

3,629,481
AUTOMATIC CHORD AND RHYTHM ELECTRONIC ORGANS

David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Sept. 9, 1970, Ser. No. 70,677
Int. Cl. G10f *1/00*
U.S. Cl. 84—1.03 **39 Claims**

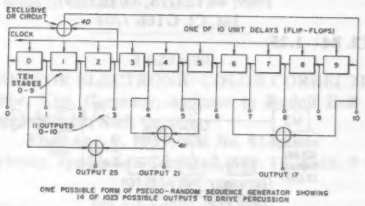


The system provides a conventional electronic organ with automatic chord accompaniment and/or an automatic rhythm system. Playing of only one note in a selected octave of the lower manual produces proper distribution between pedal and manual root, third and fifth parts of a chord in any one of five rhythms with rhythm percussive effects if desired. The pedal and/or manual notes may be rhythmically pulsed or selectively converted to continuous mode. A touch bar is provided to convert from major to minor chords. Playing of two notes defeats the chord accompaniment. Playing of three notes causes the organ to revert to conventional operation. Playing of a single note always produces a downbeat.

3,629,482
ELECTRONIC MUSICAL INSTRUMENT WITH A PSEUDORANDOM PULSE SEQUENCE GENERATOR

James K. Pulfer, and Theodore H. Shepertycki, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed June 9, 1969, Ser. No. 831,641
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.03 **3 Claims**



ONE POSSIBLE FORM OF PSEUDO-RANDOM SEQUENCE GENERATOR SHOWING 14 OF 1023 POSSIBLE OUTPUTS TO DRIVE PERCUSSION

Apparatus for producing complex rhythm patterns (rhythm "breaks") involving operation of a plurality of percussion devices in a pseudorandom manner. A clock pulse generator drives a pseudorandom pulse sequence generator having a large number of outputs on which appear a large number of different combinations of output pulses. Each clock pulse effects a change in the combination of pulses appearing at the outputs. The outputs of the pseudorandom pulse sequence generator are combined in logic gates having outputs connected to a plurality of percussion devices which are operated in pseudorandom manner (depending on the output pulse combination) at a tempo determined by the source of clock pulses. The source of clock pulses may be a free-running clock pulse generator operating at any desired one of various rates or may be derived from a musical instrument, e.g. an organ, so that the clock pulse rate (rhythm) is set by the player of the instrument.

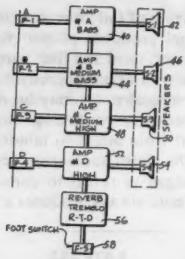
3,629,483
MULTIVOCAL MUSIC SYSTEM

Ruel E. Welch, 4206 E. Delhi, Holt, Mich.

Filed Nov. 21, 1968, Ser. No. 785,845
Int. Cl. G10h *3/08, 3/00*
U.S. Cl. 84—1.16 **4 Claims**

A musical instrument having a plurality of strings for producing sound vibrations and including a plurality of electrical pickup devices, each of which includes a coil form defining a tapered opening, a tapered permanent magnet disposed in the opening, and a voltage coil wound around the form and peripherally disposed about the magnet. Each pickup device spans all the strings and is disposed at a different location of string vibration whereby the amplitudes of

vibration have different values for each location. A plurality of amplifiers each having an input connected to a different pickup device and an output connected to one of a plurality of speakers is also provided.

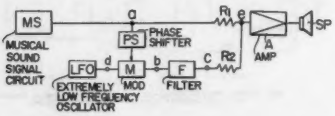


3,629,484

TREMOLO EFFECT PRODUCING DEVICE

Shoichi Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Dec. 28, 1970, Ser. No. 101,781
Claims priority, application Japan, Dec. 28, 1969, Dec. 28, 1969; 44/123778, 44/123779
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 **3 Claims**



A carrier wave having a subaudible frequency is modulated in amplitude by a modulating wave of a tone signal having an audible frequency, which produces a resultant modulated output signal having first and second side band components respectively deviated above and below the tone signal frequency by a deviation equal to the carrier frequency. The frequency of the carrier wave is selected to be much lower than that of the modulating wave, contrary to the known conventional modulation technique. The frequency-deviated signal thus obtained is admixed with the original nonfrequency-deviated musical sound signal thereby to produce a tremolo or chorus effect. The carrier wave is given a distorted waveform in order to produce a richer and more complicated tremolo or chorus effect.

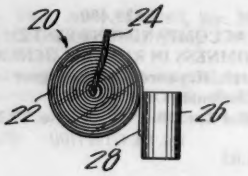
3,629,485

DRIVEN COILED GROUND

Hikoitsu Watanabe, No. 5-13, 1-chome, Ehara-cho, and Sanji Genma, No. 4-8, 1-chome, Ehara-cho, both of Nakano-ku, Tokyo, Japan

Filed Mar. 3, 1970, Ser. No. 16,079
Claims priority, application Japan, Apr. 8, 1969, 44/26588
Int. Cl. H01r *3/06*
U.S. Cl. 174—7 **6 Claims**

An electrically conductive strip-shaped metallic member or wire is wound into a coiled ground main body having an engaging member fixed to the outer end thereof so that the axis of the engaging member may be aligned with the direction in which the coiled main body is uncoiled. The engaging member is engaged with a ground driving rod so that when the driving rod is driven into the soil, the coiled ground main body is gradually uncoiled and driven straightly into the soil to a desired depth. Thereafter, the driving rod is pulled out of the soil, but the ground main body remains extended straight in intimate contact with the surrounding earth. The coiled ground may be fabricated in a simple manner; the ground driving operation is much facilitated; and the intimate contact of the driven ground with the surrounding earth may be ensured.

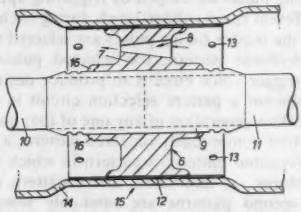


3,629,486

GAS-INSULATED BUSBAR INSTALLATION

Christy Edward Selvanayagam Swampillai, Tadworth, and Derek Reginald Edwards, Windsor, both of England, assignors to British Insulated Callander's Cables Limited, London, England

Filed Nov. 10, 1970, Ser. No. 88,414
Claims priority, application Great Britain, Nov. 19, 1969, 56,713/69
Int. Cl. H01b *9/06*
U.S. Cl. 174—16 B **2 Claims**



In a gas-insulated isolated-phase bus bar installation suitable for transmitting electric power at a voltage of at least 22 kv. and a current of at least 1,000 A. comprising a tubular load-carrying conductor mounted coaxially within a tubular outer enclosure, a length of load-carrying conductor is mounted by a plurality of supports each comprising a control hub which adheres to the surface of the said tubular conductor, to a metal sleeve fitting into the said tubular conductor, or to a metal tube acting as a joint between lengths of the said tubular conductor. The shape of each spacer is such that the cross section of the hub in any plane at right angles to the conductor axis is substantially circular and its section in any plane passing through the conductor axis is substantially elliptical at each end of the hub, with the major axis of the ellipse lying on the inner surface of the hub and the minor axis of the ellipse lying on a radius of the conductor cross section and extending to substantially the maximum thickness of the end part of the hub. The ellipse may be a circle.

3,629,487

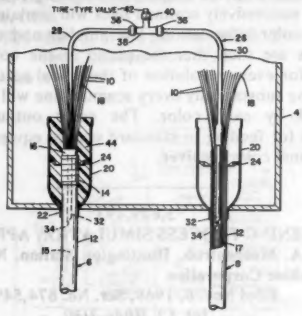
PRESSURIZED MULTISTRAND CABLE AIR BYPASS AND TESTING DEVICE

Phillip W. Cuthbert, and William R. Neail, both of Chatsworth, Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed May 1, 1970, Ser. No. 33,569
Int. Cl. H02g *15/28*; **G01m** *3/28*
U.S. Cl. 174—22 R **9 Claims**

Sections of relatively soft, resilient tubes are inserted through a gas barrier into the pressurized portion of multistrand cables. The free ends of the tubes are connected to a self-closing valve communicating the tube interior with the exterior. The tube lengths are sufficient so that each tube

length can be pinched off to temporarily interrupt the fluid communication between the corresponding pressurized cable



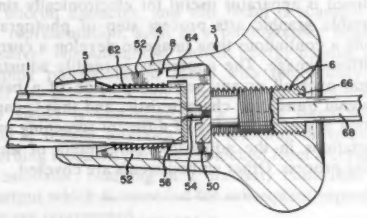
and the valve and thus permit the independent testing of the pressure medium in the other one of the pressurized cables.

3,629,488

CORONA-IMPEDING CONNECTOR DEVICE FOR HIGH VOLTAGE UTILITIES

James Lenhart Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,150
Int. Cl. H02g *15/00*
U.S. Cl. 174—73 R **6 Claims**



The disclosure relates to a connector device for impeding corona discharges in high voltage utility lines in the region of 230 Kv. which can be installed by the use of a hot stick and a hot stick applicator for holding the corona-impeding connector during application thereof to the line, the corona-impeding connector including a set of gripping jaws which lockingly grips upon the cable due to compression thereof by means of an explosive tool or the like which forces the jaw member along an inwardly tapered portion of the corona-impeding connector to place same in compression against the cable and make a locking fit therewith. The disclosure also relates to a hot stick applicator of conductive material and coated with a nonabrasive substance, at least in the areas which come in contact with the corona-impeding connector, to prevent the formation of burrs or the like which may cause corona discharge from the corona impeding connector itself during operation thereof.

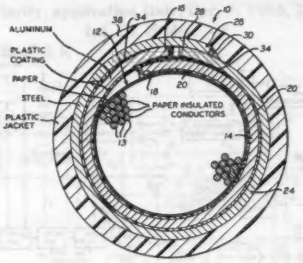
3,629,489

CABLE SHEATHING

Ludwik Jachimowicz, Elizabeth, and Joseph B. Masterson, Carteret, both of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed May 13, 1968, Ser. No. 728,501
Int. Cl. H01b *7/18*
U.S. Cl. 174—107 **12 Claims**

This improvement in Stalpeth (steel/aluminum/polyeth ylene) cable sheath has the aluminum strip coated with a waterproof coating so that in the event of puncture of the soldered steel envelope, the water that gets between the steel and the aluminum cannot interrupt the continuity of the metallic shield by corrosion of the dissimilar metals in contact with the water. In the preferred construction, the coating



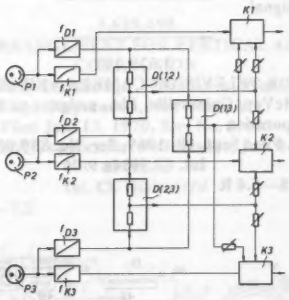
on the aluminum is fused to the steel around part of the circumference, and aluminum touches the steel along a protected longitudinally extending area to provide electrical continuity, and this is most conveniently located under the soldered seam of the steel jacket.

3,629,490

METHOD FOR ELECTRONIC COLOR CORRECTION

Hans Keller, Kiel, Germany, assignor to Rudolf Hell Kommanditgesellschaft, Kiel, Germany

Filed Apr. 9, 1969, Ser. No. 814,657
Claims priority, application Germany, Apr. 18, 1968, P 17 72 234.8
Int. Cl. G03b *27/78*
U.S. Cl. 178—5.2 A **2 Claims**



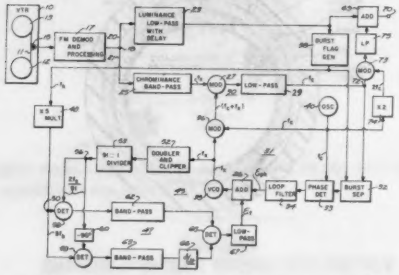
A method for the electronic color correction of an electrical signal representing a color record employing a secondary correction signal derived by difference formation from a primary color separation signal to be corrected and a primary color correction signal of the same grey gradation, wherein the secondary correction signal disappears for grey tones, and in which the color separation signal to be corrected and the signals to be used for the difference formation are transformed according to respective different preferably nonlinear functions lying between logarithmic and linear functions, with the curve of the color separation signal to be corrected more closely approaching a logarithmic function and the curve of the signals to be used for difference formation more closely approaching a linear function.

3,629,491

SIGNAL-CORRECTING APPARATUS

Bert H. Dann, Mountain View, and Floyd M. Gardner, Reseda, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,416
Int. Cl. H04n 9/02, 5/78
U.S. Cl. 178—5.4 CD 7 Claims



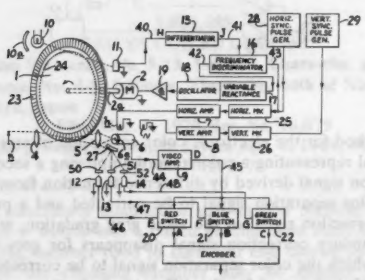
Apparatus for providing a reference signal varying in phase in accordance with angular errors in a color video signal accompanied by a horizontal synchronization signal and by a color reference burst including a number of undesired sideband components stemming from a keying of the color reference burst at horizontal synchronization rate. The apparatus comprises a controlled oscillator for providing an output signal and for varying the phase of such output signal. The apparatus further includes a control loop for limiting frequency variations of this output signal to a range located between upper sideband components and lower sideband components of the number of undesired sideband components of the color reference burst, and a further control loop for causing the defined controlled oscillator to vary the phase of the above-mentioned output signal within the defined range in accordance with said angular errors, whereby such output signal provides the initially mentioned reference signal.

3,629,492

COLOR TELEVISION CAMERA AND METHOD

David S. McVoy, Gainesville, Fla., assignor to Coaxial Scientific Corporation

Filed Sept. 18, 1969, Ser. No. 859,081
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 R 7 Claims



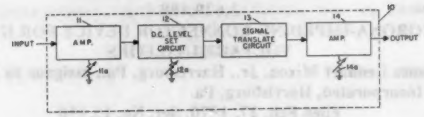
A color television camera and method utilizes a standard black and white television camera with a vidicon tube. Light from the object having being viewed passes through a lens system which causes the light to pass through color filters located at the periphery of a rotating filter wheel, after which the image is focused onto the light-sensitive surface of the vidicon tube. The filter wheel contains red, green and blue filters and is rotated by a motor, the speed of which is synchronized with the horizontal scanning rate of the tube such that successively scanned lines will contain successively different color information. The number and disposition of the filters are such that the phase of the color output is changed for every revolution of the wheel so that for every third frame substantially every scanned line will have been illuminated by each color. The color outputs are then separated for feeding to standard coding equipment or to a conventional color receiver.

3,629,493

SCREENING PROCESS SIMULATION APPARATUS

Rudolph A. Morgenfruh, Huntington Station, N.Y., assignor to Hazeltine Corporation

Filed Nov. 6, 1969, Ser. No. 874,549
Int. Cl. H04n 3/30
U.S. Cl. 178—6 10 Claims



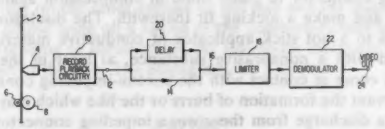
Disclosed is apparatus useful for electronically simulating the variable graphic arts process step of photographically screening a continuous tone image to develop a corresponding halftone image. The apparatus is readily adjustable for operation over all or any selected portion of a basic nonlinear signal translation characteristic, and thus is capable of simulating any of a plurality of different screening processes and variations in the adjustable parameters of any single screening process. Other embodiments are covered.

3,629,494

SIGNAL PROCESSOR FOR DROPOUT CORRECTION BEFORE DEMODULATION

Robert Norman Hurst, Cherry Hill, N.J., assignor to RCA Corporation

Filed Aug. 18, 1969, Ser. No. 850,907
Int. Cl. H04n 5/21, 5/78
U.S. Cl. 178—6.6 DC 6 Claims



There is provided a circuit for compensating for defective or missing portions of an angle modulation information signal. The angle modulation signal is simultaneously applied directly and through an attenuating delay means to a limiter. The limiting level of the limiter is such as to provide a saturated output in response to the attenuated signal from the delay means. In this manner a missing portion of the information signal directly applied to the limiter is automatically compensated by a previous portion of the information signal from the delay means.

3,629,495

SCANNER WITH ANALOG TO DIGITAL SIGNAL CONVERSION

Lysle D. Cahill, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 3, 1969, Ser. No. 803,912
Int. Cl. H04n 1/04, 1/28
U.S. Cl. 178—6.6 A 5 Claims

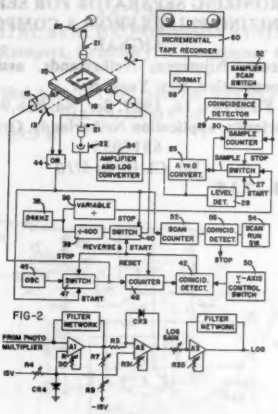


FIG-2

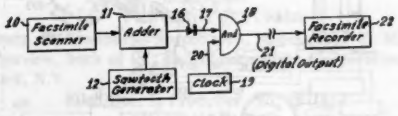
A scanner focuses a beam of radiant energy, in the order of one micron diameter, and this beam is scanned over a graphic representation, such as a photographic negative or film positive. The amount of radiant energy passing through the graphic representation varies with the density of the image at any given spot and is sensed by a transducer. This variable signal is converted to a digital signal which is recorded at regular intervals. The scanning movement and the recording frequency are both clocked from a crystal controlled oscillator, resulting in a precisely controlled digital signal output which is recorded for subsequent reproduction of the image represented.

3,629,496

ENCODING OF PICTURE SIGNALS IN PHOTOFACSIMILE

Kenneth R. McConnell, Northport, N.Y., assignor to Litton Systems, Inc.

Filed Dec. 30, 1969, Ser. No. 889,095
Int. Cl. H04n 1/40
U.S. Cl. 178—7.1 10 Claims



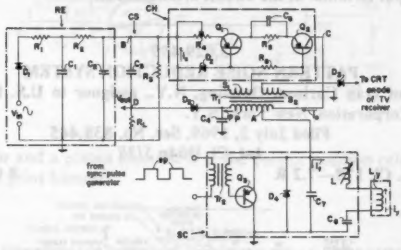
A method and apparatus for electrically transmitting subject copy such as continuous tone photographs by digitized signals of a character determined by the changes in tone density in different areas of the subject copy. The varying analog signal output of the facsimile scanner is converted into digital signals forming a sequence of short pulses for transmission to the recorder, the digital signals being varied in such a manner as to reproduce the black and the gray shaded areas of the subject copy.

3,629,497

STABILIZED POWER SUPPLY WITH DC VOLTAGE STEP-DOWN FOR TRANSISTORIZED TELEVISION RECEIVERS AND THE LIKE

Italo Soardi, Pavia, and Giancarlo Pagani, Milan, both of Italy, assignors to Ates Componenti Elettronici S.p.A., Milan, Italy

Filed Dec. 4, 1969, Ser. No. 882,142
Claims priority, application Italy, Dec. 5, 1968, 24645 A/68
Int. Cl. H04n 5/44
U.S. Cl. 178—7.3 R 7 Claims



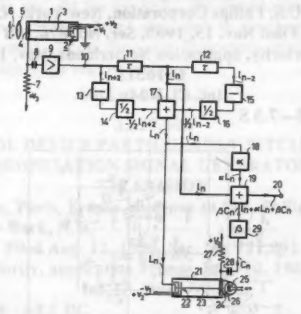
A rectified supply voltage from an AC utility outlet is chopped under the control of a recurrent flyback pulse from the horizontal sweep circuit of a television receiver with the aid of a normally blocked chopping transistor in series with an ancillary transistor, the two transistors being of like conductivity-type and having their bases conductively interconnected by a high-ohmic resistor. A trigger pulse is periodically applied between the emitter of the ancillary transistor and the base of the chopping transistor through a secondary winding of a transformer whose primary winding acts as an inductance of a smoothing network for the chopped supply voltage. A differentiation circuit connects the collector of the ancillary transistor to the emitter of the chopping transistor, a Zener diode in the input of the ancillary transistor stabilizing the system against fluctuations in driving voltage.

3,629,498

CIRCUIT ARRANGEMENT FOR VERTICAL APERTURE CORRECTION

Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to Philips Corporation, New York, N.Y.

Filed Jan. 13, 1970, Ser. No. 2,460
Claims priority, application Netherlands, Jan. 14, 1969, 6900556
Int. Cl. H04n 5/14
U.S. Cl. 178—7.2 4 Claims



A circuit arrangement for vertical aperture correction of a picture signal which is line and field-generated by means of a television camera. The line interlaced generated picture

signal is applied to a first correction circuit wherein at least one delaying element gives the picture signal a first and a second time delay of one line period, and wherein by means of comparison a correction signal is derived from the undelayed picture signal and the picture signal delayed once and twice. This correction signal is applied to a second correction circuit which is provided with a delaying element having a time delay of approximately one field period, the second correction signal provided by the second correction circuit and a picture signal delayed by one line period being applied to an adder an output terminal of which forms the output terminal of the circuit arrangement.

3,629,499

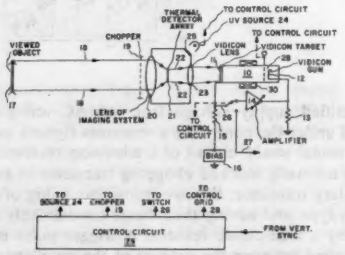
PATTERN NOISE REDUCTION SYSTEM

Allan Ivan Carlson, Ossining, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1969, Ser. No. 838,445

Int. Cl. H04n *5/38*

U.S. Cl. 178—7.2 R **8 Claims**



This invention relates to an apparatus and methods for reducing pattern noise in a vidicon type camera tube and particularly a vidicon camera tube system embodying a thermal detector array for viewing infrared radiation. A chopper is placed in front of the detector and switched open and shut. Thus, the vidicon target receives alternatively signal plus noise and noise alone. When receiving the noise alone, the target is overcharged above a bias level by an external source to an amount equal to the discharge due to the noise. Therefore, when the target receives signal plus noise, the noise components will subtract out.

3,629,500

SYNCHRONIZING SIGNAL SEPARATOR WITH MEANS TO PREVENT DISCHARGE OF A THRESHOLD VOLTAGE CAPACITOR DURING NOISE PULSES

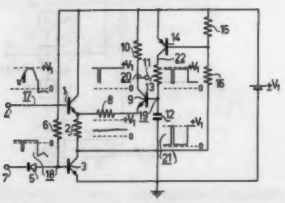
Wouter Smeulers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,398

Claims priority, application Netherlands, Nov. 19, 1968, 6816515

Int. Cl. H04n *5/08*

U.S. Cl. 178—7.3 S **8 Claims**



A synchronization signal separator has an amplitude limiter which allows only synchronization signals to pass. A threshold capacitor determines the clip level of the amplitude limiter. An interference signal suppression circuit cuts off the amplitude limiter during noise pulses. To prevent discharge of the capacitor during noise pulses, the suppression circuit is coupled to the capacitor. Therefore, the separator will not become blocked during long duration noise signals.

3,629,501

SYNCHRONIZING SEPARATOR FOR SEPARATING SYNCHRONIZING PULSES FROM A COMPOSITE VIDEO SIGNAL

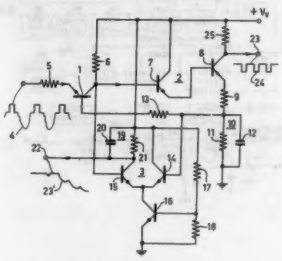
Adriaan Cense, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1969, Ser. No. 866,946

Claims priority, application Netherlands, Oct. 16, 1969, 6815053

Int. Cl. H04n *5/10*

U.S. Cl. 178—7.3 S **6 Claims**



A synchronization signal separator has an amplitude limiter followed by a clipper stage. An RC network has a time constant longer than the line period, but shorter than the field period, and is coupled to the limiter and clipper by resistors. This causes feedback that prevents the circuit from operating on the vertical sync pulses.

3,629,502

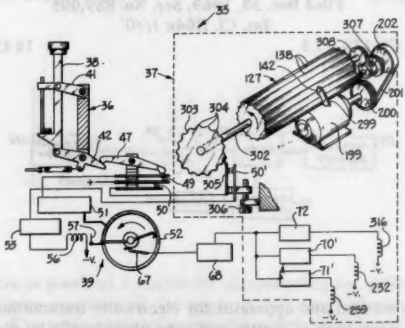
PRINTING SYSTEM USING A CONTINUOUSLY MOVING PLATEN

Wilburn F. Bradbury, Northbrook, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,410

Int. Cl. H04l *13/34*

U.S. Cl. 178—25 **15 Claims**



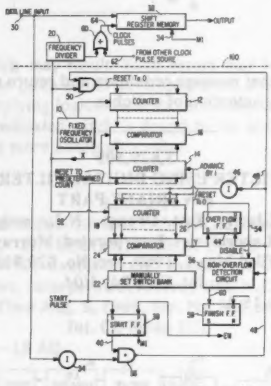
There is disclosed a dot matrix or telegraphic progressive printing system including an encoding device such as keyboard or reader, a code translator, and a printer for progressively printing a symbol on a record medium during each printing cycle. In the illustrated embodiments, a platen having platen edges rotates continuously, a carriage travels at

a constant rate relative to the platen during each printing cycle, and a print hammer mounted by the carriage cooperates with successive platen edges or elements of the platen in accordance with the symbol pulse units received from the code translator. The printing cycle for a selected symbol is initiated when a stored signal is ready to be applied to the printer and a platen element is in the proper position relative to the print hammer.

3,629,503
DIGITAL SYNCHRONIZATION SYSTEM

Lawrence A. Rempert, Cranbury, N.J., assignor to RCA Corporation

Filed Apr. 1, 1969, Ser. No. 811,913
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **8 Claims**



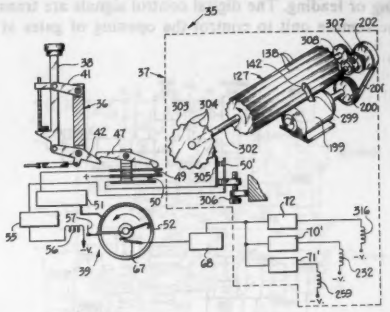
A system for automatically adjusting a receiver to the "format" of received characters. The format refers to the number B of bit transmission intervals per character and the duration Δt of each such interval, where B is unknown and is in the range B_0 to B_m and Δt is unknown and is in the range Δt_0 to Δt_m. In response to the reception of timing signals of duration $B_0\ \Delta t$, where only B_0 is known in advance, the system generates clock pulses spaced intervals Δt. In the response to the reception of timing signals of duration $B\ \Delta\ t$, after Δt has been ascertained by the system, it generates B such clock pulses for each subsequently received character, each clock pulse concurrent with a character bit interval.

3,629,504
PRINTING SYSTEM

Wilburn F. Bradbury, Northbrook, and George E. Misthos, Glenview, both of Ill., assignors to SCM Corporation, New York, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,412
Int. Cl. H04l *15/34*
U.S. Cl. 178—25 **22 Claims**

There is disclosed a dot matrix or telegraphic progressive printing system including an encoding device such as keyboard or reader, a code translator, and a printer for progressively printing a symbol on a record medium during each printing cycle. In the illustrated embodiments, a platen having platen edges rotates continuously, a carriage travels at a constant rate relative to the platen during each printing cycle, and a print hammer mounted by the carriage cooperates with successive platen edges or elements of the platen in accordance with the symbol pulse units received from the code translator. The printing cycle for a selected symbol is initiated when a stored signal is ready to be applied to the

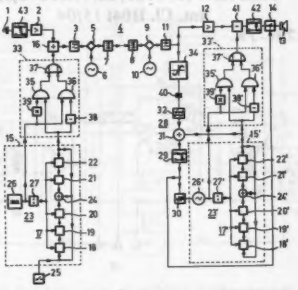


printer and a platen element is in the proper position relative to the print hammer.

3,629,505
TRANSMISSION SYSTEM FOR THE TRANSMISSION OF INFORMATION IN A PRESCRIBED FREQUENCY BAND

Leo Eduard Zegers; Wilfred Andre Maria Snijders, and Jan Kuilman, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1969, Ser. No. 795,109
Claims priority, application Netherlands, Feb. 1, 1968, 6801502
Int. Cl. H04j *3/06*
U.S. Cl. 178—69.5 R **4 Claims**



A transmission system where at the transmitter a source of information pulses is mixed with frequency modulated pseudorandom pulses, which can serve as synchronization, address signals, etc. At the receiver, the pseudorandom signals are frequency demodulated and used to synchronize a local pulse generator. Then they are frequency modulated and subtracted from the received signal.

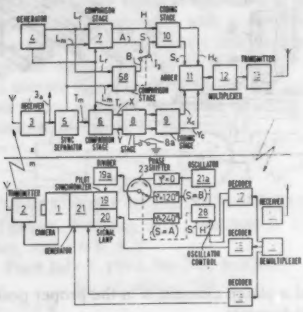
3,629,506
CONTROL DEVICE PARTICULARLY SUITABLE FOR SYNCHRONIZATION SIGNAL GENERATORS FOR TELEVISION

Roger Brun, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,891
Claims priority, application France, Aug. 10, 1967, 117508
Int. Cl. H04i *7/00*
U.S. Cl. 178—69.5 DC **5 Claims**

In a synchronization system for an oscillator, such as a deflection generator for a remote television camera, the oscillator is provided with N output terminals at which oscillations with different phases (N is an integer). The oscillations from the remote camera are compared with the oscilla-

tions of a local master oscillator in order to produce digital control signals indicating whether the remote oscillator is lagging or leading. The digital control signals are transmitted to the remote unit to control the opening of gates at the N



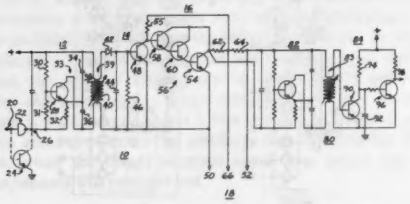
output terminals of the remote oscillator in order to stop the phase of the remote oscillations. The remote oscillator preferably has a frequency that is a high multiple of the line frequency, and the oscillations are frequency divided at the output of the N output terminals.

3,629,507

SOLID-STATE LINE KEYER

John L. Worrall, Prairie View, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,323
Int. Cl. H04l *15/04*
U.S. Cl. 178—79 **11 Claims**



A solid-state line keyer used in a telegraph system isolates an input signal from a signal line. The keyer includes an oscillator responsive to the input signal to which is inductively coupled by means of an adjustable transformer a control transistor whose output controls a Darlington circuit connected in series with and energized by the signaling line. The Darlington circuit provides a low-impedance loop during a normal mark condition and the control transistor provides a high-impedance loop when an input signal is impressed on the keyer to indicate a space condition.

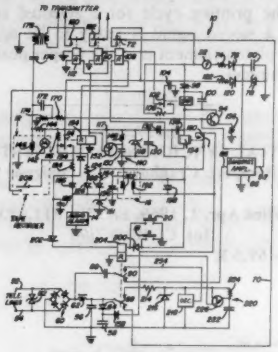
3,629,508

VISUAL READOUT RECEIVER

Roger C. Glidden, 12 Pleasant St., Wenham, Mass.

Filed Sept. 16, 1969, Ser. No. 858,437
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **18 Claims**

A coded message receiver at a dialed telephone station loads the lines in response to a gating tone, by setting into operation readout devices such as a magnetic tape recorder and an impulse counter as well as an audible alarm. During an ensuing message period, code signal tone bursts transmitted through the lines are recorded and counted. Upon completion of the message period, operation of the readout devices is terminated and the receiver circuit conditioned for reset. The output of the alarm is increased to signal message



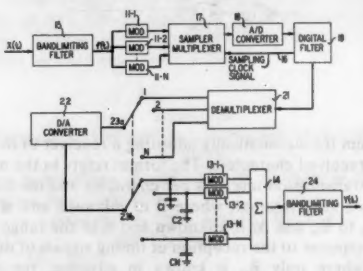
reception so that message repetition and return signaling may be effected by actuation of switches.

3,629,509

N-PATH FILTER USING DIGITAL FILTER AS TIME INVARIANT PART

Arthur B. Glaser, East Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1969, Ser. No. 820,813
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 A **8 Claims**



A time division multiplexed digital filter is used as the time-invariant part of an N-path filter. The use of a multiplexed digital filter alleviates the problem of closely matching the transmission characteristics of each of the N-paths.

3,629,510

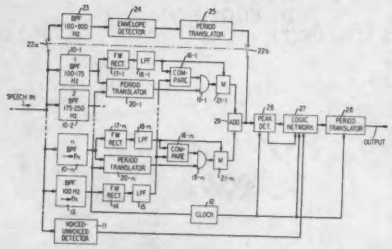
ERROR REDUCTION LOGIC NETWORK FOR HARMONIC MEASUREMENT SYSTEM

Frederick N. Anderson, Neptune, and Ralph L. Miller, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1969, Ser. No. 880,018
Int. Cl. G10l *1/02*
U.S. Cl. 179—1 SA **6 Claims**

The fundamental period of a complex periodic signal may be determined by measuring the periods of individual harmonics of the periodic signal and finding their smallest common multiple. A useful display of harmonics and their submultiples is called a period histogram. Since the fundamental period in a period histogram is an integral multiple of a number of harmonics and is characterized by a maximum amplitude pulse, the time of occurrence of the first maximum

pulse may be taken to represent the fundamental period of the complex periodic signal. However, because the largest peak of the histogram does not always correspond to the fundamental frequency of a wave, occasional errors in the indication of pitch may result. Such errors may be obviated by examining the pitch signal developed from a histogram measurement, applying logical tests to determine its acceptability and, if the indicated pitch is found to be unacceptable, by substituting a more acceptable value.

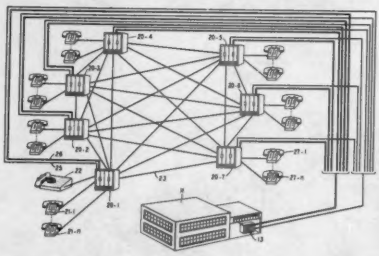


3,629,511

PBX TELEPHONE SYSTEM WITH MAIN AND SATELLITE SWITCH UNITS

Richard B. Wolf, Evanston, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 5, 1969, Ser. No. 847,545
Int. Cl. H04q *3/58*
U.S. Cl. 179—18 AD **10 Claims**



A switching and control arrangement for a private branch exchange (PBX) system is described in which a plurality of satellite switch units, each terminating a distinct plurality of lines, are served by a common control unit at a remote central office. Only one of the switch units has attendant facilities, and the switch units may be directly interconnected to serve calling and called stations located in different switch units.

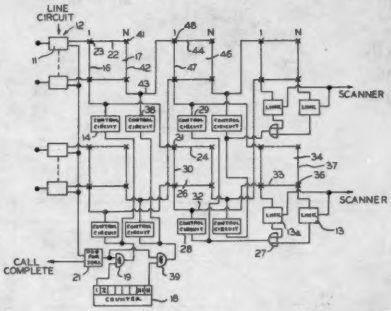
3,629,512

PATH SELECTION SYSTEMS

William K. C. Yuan, 186 Birch, Park Forest, Ill.

Filed Sept. 8, 1969, Ser. No. 855,983
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 GE **16 Claims**

Path selection systems for use in selecting paths in multistage cross-point-type networks. Scanner operated control circuits at both ends of the network are provided that in conjunction with a request for service signal are capable of testing every possible path and cutting through the path that successfully traverses all stages. The control equipment then holds the connection and blocks busy verticals. The system is extremely reliable and uses a minimum of control equipment.

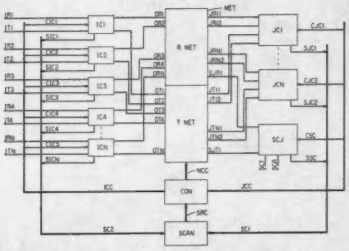


3,629,513

UNBALANCED AND BALANCED SWITCHING NETWORK FOR BALANCED TRANSMISSION CIRCUITS

Alexander Feiner, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1969, Ser. No. 879,203
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 GF **21 Claims**



A single and double wire switching arrangement in which each balanced two-wire transmission circuit is transformer coupled with two single-wire network terminations with capacitive DC isolation between the transformer windings and a reference potential connected between the isolating capacitors. Either of two unbalanced single-wire paths or one balanced two-wire path can be established through the network from each transmission circuit. A single-wire path is sufficient for most functions; however, the two-wire path is available for those functions requiring a metallic or a balanced path. Network blocking is low since the majority of network paths are single wire thus freeing unused single-wire links, for other paths. Supervision can be maintained either at a transmission circuit or at a junctor circuit included in the network path.

3,629,514

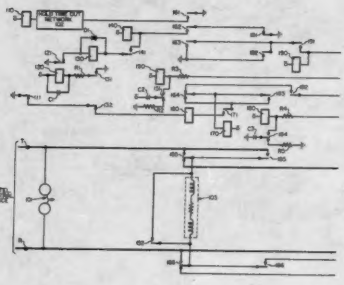
SUBSCRIBER'S HOLDING CIRCUIT

Joseph D. Flamini, Jr., Addison, Ill., assignor to G.T.E. Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 2, 1970, Ser. No. 7,560
Int. Cl. H04m *1/00*
U.S. Cl. 179—99 **7 Claims**

A circuit arrangement for connection to a telephone subscriber's line where two or more telephone instruments are connected to the same line. The included circuitry permits a

subscriber to place a "hold" on the telephone line, by momentarily operating his hookswitch, or dialing the digit "1," if his telephone is equipped with a conventional rotary dial,



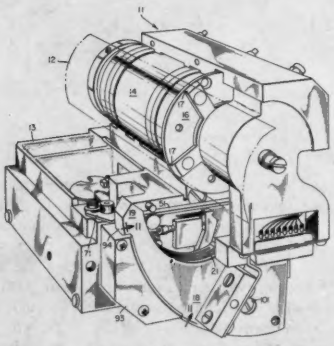
after which he may hang up and then may continue his conversation at a second telephone instrument, or return to the first telephone.

3,629,515

MOUNT FOR CONCAVE TAPE GUIDE THAT CLEARS A LOADING PATH

Dale P. Dolby, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 24, 1969, Ser. No. 809,665
Int. Cl. G11b *5/52*
U.S. Cl. 179—100.2 T **13 Claims**



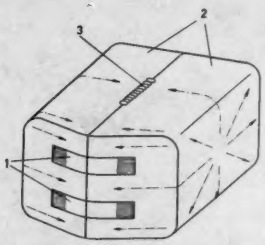
A concave tape guide pivots in the plane of a rotary head drum to open and clear a path for lateral loading and unloading of the tape. Fine positioning of the guide in the closed position is provided independently in each of three orthogonal directions. A double-ended wedge element, shaped like a parallelogram, is used for fine positioning of the guide in one direction; and two bearings on the guide are caused to engage and follow opposite parallel faces of the wedge element as by means of pivoting torque applied to the guide through a universal jointed shaft that is bendably flexible but torsionally and axially rigid. Thus, both the closing forces and the positioning forces are applied by the shaft, which is nevertheless free for radial movement as the fine position of the guide is altered.

3,629,516

STABLE MAGNETIC HEADS WITH HOUSING FORMED FROM PRESSURE-CAST DISH-SHAPED PARTS

Wolfgang Bogen, Potsdamer Strasse 23/24, 1 Berlin 37, Germany

Filed May 16, 1969, Ser. No. 825,182
Claims priority, application Germany, May 16, 1968, P 17 74 285.7
Int. Cl. G11b *5/10, 5/42*
U.S. Cl. 179—100.2 C **2 Claims**



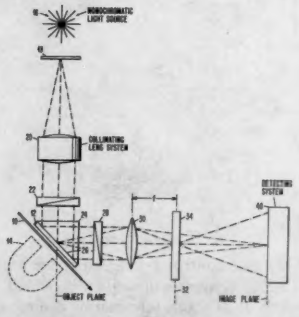
A magnetic head, which is time and temperature stable, is provided with dish-shaped metal parts forming a housing in which magnetic cores are embedded in recesses in the parts, the fiber direction of the material of the shaped parts not being interrupted by milling the recesses for the cores nor by forming of the dish-shaped configuration thereof.

3,629,517

METHOD AND APPARATUS FOR MAGNETO-OPTICAL READING OF SUPERIMPOSED MAGNETIC RECORDINGS

Marian Andreas Grimm, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,826
Int. Cl. G11b *11/10;* **G02f** *1/18;* **G02b** *5/18*
U.S. Cl. 179—100.2CH **10 Claims**



Superimposed tracks of magnetic recordings are read by use of a magneto-optic transducer. The recordings are on magnetic tape which is passed in close proximity to a magnetic thin-film layer coated to the reflecting side of a prism. The superimposed recordings on the tape are transferred in bulk to the magnetic thin film. Linearly polarized, monochromatic, collimated, substantially coherent light is passed into the prism and reflected from the back of the prism and out the other face of the prism. At the reflecting surface, the linearly polarized light experiences a rotation of its plane of polarization because of the magnetic field stored in the thin film. The rotation is in accordance with the well-known magneto-optic Kerr effect. The rotated light passes out of the prism and through an analyzer. The analyzer is adjusted to pass only that light which was given a particular rotation by the magnetic thin film. Because recorded tracks are closely

spaced, the light emitted from the analyzer is similar to light passing out of a diffraction grating. This light passes through a lens which forms a Fraunhofer diffraction pattern of the light passed by the analyzer at the focal plane of the lens. A Fraunhofer diffraction pattern for each orientation of recorded tracks appears at the focal plane. A spatial filter is placed at the focal plane of the lens and rotated to align itself with the Fraunhofer pattern associated with one orientation of tracks. The spatial filter passes only the light of the pattern which the filter is aligned with. This light is imaged onto a detector system to read out the information recorded in tracks orientated to produce the filtered pattern.

3,629,518

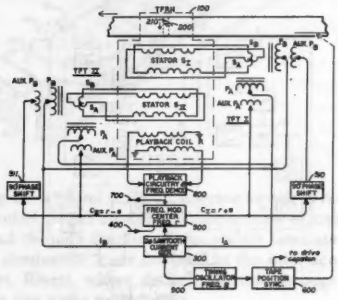
ROTATING FIELD TRANSFORMER AND TAPE RECORDING SYSTEM USING SAME

Michael J. Costa, 41 Green Place, New Rochelle, N.Y.

Continuation of application Ser. No. 503,122, Oct. 23, 1965, now abandoned. This application Nov. 10, 1969, Ser. No. 871,533

Int. Cl. G01d *15/12*; **G11b** *5/20*; **H04r** *1/24*

U.S. Cl. 179—100.2 T **17 Claims**



A magnetic recording and reproducing head which produces an incremental magnetic field perpendicular to the plane of the record medium. The field is caused to travel along a path which is transverse to the length of a relatively slow moving tape thus producing high-relative speed between tape and field.

The recording field is generated by applying opposing sawtooth signals to a pair of orthogonally related stator coils on the head and is modulated by changing the relative phase of the sawtooth signals. The signals are applied to the head through transformers having main and auxiliary primary coils, the sawtooth signals being applied to the main primary coils and modulating signals being applied to the auxiliary coils.

3,629,519

MAGNETIC HEADS WITH POLES JOINED BY MOLECULAR TRANSPORT BONDING

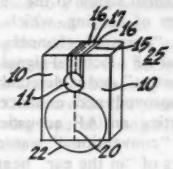
Joseph John Hanak, Trenton, N.J., assignor to RCA Corporation

Original application May 23, 1967, Ser. No. 641,443, now Patent No. 3,479,738, dated Nov. 25, 1969. Divided and this application Aug. 15, 1969, Ser. No. 850,570

Int. Cl. G11b *5/22, 5/42*

U.S. Cl. 179—100.2 C **4 Claims**

There is disclosed a magnetic transducer and method of manufacturing the same for use in high-frequency recording and reproducing apparatus. The transducer comprises at least two circuit parts of single-crystal ferrite positioned to form a front gap, which is filled by a suitable technique with a nonmagnetic spacing material. The back surfaces of the ferrite circuit parts are united by molecular transport which provides a relatively low reluctance path in the vicinity of the final assembled transducer which was formerly occupied by the back surfaces of the circuit parts or back gap. The molecular transport bond results in a ferrite molecular disturbation which affords a reluctance of the same order of magnitude as the reluctance associated with a continuous body of ferrite, minimizing the drive current required for operation because of the virtual elimination of the back gap in the transducer.



3,629,520

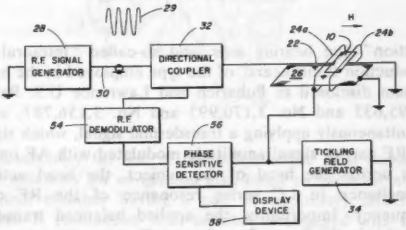
READOUT AND RECORDING METHOD AND APPARATUS

Leonard J. Schwee, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 11, 1969, Ser. No. 884,103

Int. Cl. G11b *5/02*; **G11c** *11/14*

U.S. Cl. 179—100.2CF **7 Claims**



A method and apparatus for nondestructive readout of magnetic images stored on magnetic thin films and for recording magnetic inputs on thin films. A uniaxially anisotropic thin film of magnetic material carrying a recorded magnetic image is transported over a transmission line in the presence of a magnetic tickling field. A radiofrequency oscillator is coupled to the transmission line and the tickling field is made to oscillate at a relatively low frequency. The magnetic image recorded on the passing thin film is then read out by detecting the modulation of the radiofrequency signal caused by ferromagnetic resonance absorption. The same apparatus is used for recording by replacing the radiofrequency oscillator with a direct current source and by modulating the tickling field with the signal to be recorded.

3,629,521

HEARING SYSTEMS

Henry K. Puharich, Ossining, and Joseph L. Lawrence, New York, both of N.Y., assignors to Intelectron Corporation, New York, N.Y.

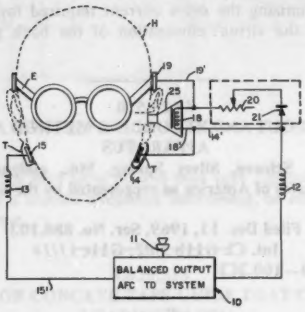
Continuation-in-part of application Ser. No. 682,152, Nov. 13, 1967, now Patent No. 3,497,637, and a continuation-in-part of 446,267, Apr. 6, 1965, now abandoned. This application Jan. 8, 1970, Ser. No. 1,334

Int. Cl. H04r *25/00*

U.S. Cl. 179—107 R **11 Claims**

The present invention relates to the stimulation of the sensation of hearing in persons of impaired hearing abilities or in certain cases in persons totally deaf utilizing RF energy.

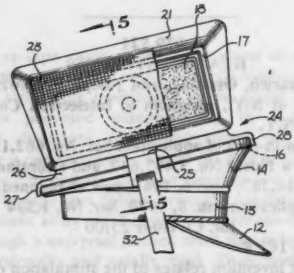
More particularly, the present invention relates to a method and apparatus for imparting synchronous AF or "acoustic" signals and so-called "transdermal" or RF signals. Hearing and improved speech discrimination, in accordance with one aspect of the present invention, is stimulated by the application of an AF acoustical signal to the "ear system" conventional biomechanism of hearing, which is delivered to the brain through the "normal" channels of hearing and a separate transdermal RF electrical signal which is applied to the "facial nerve system" and is detectable as a sensation of hearing. Vastly improved and enhanced hearing may be achieved by imparting an AF acoustic signal to the ear system by means of "conventional" transducers, such as electroacoustic speakers of "in the ear" hearing aids; piezoelectric or mechanical transducers of conventional "bone conduction"-type hearing aids; and so-called "intraoral bone conduction transducers" of the type employed in the hearing system disclosed in Puharich and Lawrence U.S. Pat. No. 2,995,633 and No. 3,170,993 and No. 3,156,787, and by simultaneously applying a transdermal signal, which signal is an RF carrier signal amplitude modulated with AF information across the head of the subject, the head acting as capacitance in LC series resonance of the RF carrier frequency. Importantly, the applied balanced transdermal signal is in the form of a substantially pure sine wave, and it is applied to the head through one bare and one insulated electrode. The applied transdermal signal is applied to the periaural and stylomastoid regions of the head and, accordingly, the apparatus of the invention may be readily adapted for use in the temples of "eyeglass" hearing aid devices.



3,629,522
HEADPIECE LOUDSPEAKER

Paul E. Richards, Los Angeles, Calif., assignor to Promar International, Inc., Chatsworth, Calif.

Filed Apr. 1, 1969, Ser. No. 812,153
Int. Cl. H04m *1/05*
U.S. Cl. 179—156 **9 Claims**

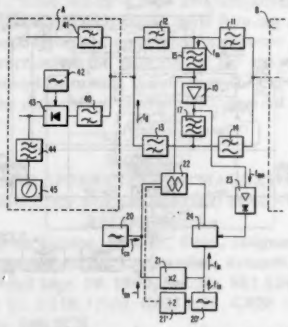


A headpiece loudspeaker is disclosed herein having a headpiece incorporating a loudspeaker oriented so as to propagate acoustical energy from opposite sides of the headpiece. The side lobe propagation emanating from each side of the headpiece forms, in combination, a substantially "figure eight" configuration offering approximately 360° distribution of the acoustical energy emanating from a single loudspeaker. The headpiece is provided with a crown and, in one form, a detachable mount carries the loudspeaker thereon. In another form, the loudspeaker is fixed to the crown of the headpiece and a diverter baffle is disposed in fixed opposing spaced relationship to the vibrating cone of the loudspeaker that is adapted to translate acoustical energy into truly 360° distribution or excursion.

3,629,523
REPEATER FOR A TRANSMISSION LINE AND A METHOD OF MONITORING THE REPEATER IN THE LINE

Christian Chalhoub, Paris, France, assignor to C.I.T. Compagnie Industrielle des Telecommunication, Paris, France

Filed Sept. 24, 1969, Ser. No. 860,746
Claims priority, application France, Sept. 25, 1968, 167602
Int. Cl. H04b *3/46;* **H04l** *25/02*
U.S. Cl. 179—175.31 **13 Claims**

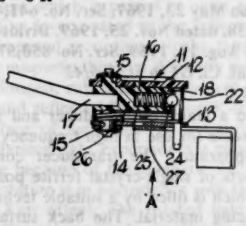


Each repeater is fitted with a transmitter of a characteristic frequency located in the interband range of a $n + n$ high-band and low-band link. By combining with a measuring frequency in the low band transmitted from the terminal station A, the nonlinearity of the repeater gives rise to a frequency in the high band which is received and measured in this same terminal station A.

3,629,524
PIVOTAL SWITCH WITH ROTOR CARRYING TWO MOVABLE CONTACTS AND HAVING THREE STABLE AND ONE UNSTABLE OPERATING POSITIONS

Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 6, 1970, Ser. No. 17,056
Claims priority, application Great Britain, Mar. 17, 1969, 13,792/69
Int. Cl. H01h *23/30, 21/18*
U.S. Cl. 200—6 R **3 Claims**



An electrical switch includes a body, and a rotor mounted for angular movement relative to the body. A first bridging

contact is carried by the rotor, and first and second fixed electrical contacts are carried by the body, the first and second fixed electrical contacts being angularly spaced from one another and being bridged by the first bridging contact in a first angular position of the rotor. The switch further includes a second bridging contact movable in response to movement of the rotor to a further angular position to bridge the first and second fixed electrical contacts.

3,629,525

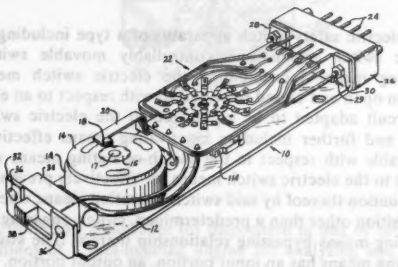
LOAD SELECTOR ROTARY WAFER SWITCH WITH PRINTED CIRCUIT

Clifford C. Giese, Jr., Kettering, Ohio, assignor to Ledex Inc.

Filed Feb. 18, 1970, Ser. No. 12,268

Int. Cl. H01h *19/58, 51/08*

U.S. Cl. 200—11 DA **10 Claims**



Wiring for a plural position selector switch is reduced by use of printed circuit elements. Compactness of construction is achieved through the use of two wafers laminated face to face and conductive leads disposed at the interface between the wafers. Rivets, where desired, provide through connections from one wafer to the other.

3,629,526

SLIDER SWITCH WITH IMPROVED DETENT MEANS

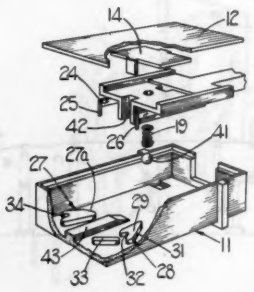
Keith Lewis, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 17, 1969, Ser. No. 858,664

Claims priority, application Great Britain, Sept. 23, 1968, 45,076/68

Int. Cl. H01h *15/00, 3/00*

U.S. Cl. 200—16 C **4 Claims**



This invention relates to electrical switches. The switch includes a body supporting first and second fixed contacts and a slider which is mounted for sliding movement in the body. The slider carries a third contact, and is movable from a first position wherein the third contact is clear of the first and second contacts to a second position wherein the third contact engages the first contact. The slider is further movable from the second position to a third position wherein the third contact engages the second contact. There is provided resilient means urging the slider towards its first position, and a first pair of coacting parts, on the body and slider respectively, which are operable to releasably retain the slider in the second position. There are further provided a second pair of coacting parts being operable to releasably retain the slider in the third position.

3,629,527

CONTACT BREAKER ASSEMBLIES WITH IMPROVED CONTACT BREAKER ARM RETAINING MEANS

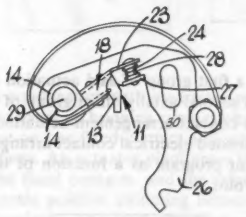
William Lawrence Fry, Haughton, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 14, 1969, Ser. No. 876,953

Claims priority, application Great Britain, Nov. 22, 1968, 55,520/68

Int. Cl. H01h *19/00, 3/00*

U.S. Cl. 200—19 R **2 Claims**



A subassembly for use in the manufacture of a contact breaker assembly for an ignition distributor includes an insulating heel member having a pair of oppositely directed shoulders. A conductive shell member is engaged with the heel member the shell member being of generally U-shaped cross section and the heel member being received between the limbs of the shell member. The shoulders of the heel member engage opposite ends of the shell member so as to resist longitudinal movement of the shell member relative to the heel member, and one of the limbs of the shell member includes a barb which bites into one of the shoulders of the heel member to resist disengagement of the shell member from the heel member in a direction parallel to the limbs of the shell member. In use the shell member carries the movable contact of the contact breaker assembly.

3,629,528

ELECTRICAL TIMER MECHANISM WITH IMPROVED CAM OPERATED ACTUATING MEANS

Hans Hirzel, Zurich, Switzerland, assignor to Firma Novitas Fabrik Elektrischer Apparate AG Zurich, Zurich, Switzerland

Filed June 29, 1970, Ser. No. 50,800

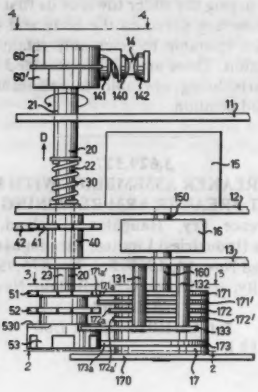
Claims priority, application Switzerland, July 7, 1969, 10450/69

Int. Cl. H01h *7/08, 43/10*

U.S. Cl. 200—38 R **5 Claims**

A program-controlled electrical switching mechanism comprising a motor driven rotor and a plurality of exchangeable and angularly adjustable actuation fingers are seated axially behind one another at the rotor. Further, an additional actuation finger is secured to the rotor in a selectable angular position and a program change-switching wheel cooperates with such additional actuation finger. The program change-switching wheel is provided with axially directed cam means and a counterelement is resiliently biased against said axially

directed cam means such that upon attaining at least a predetermined rotational position there is undertaken a relative axial displacement of the rotor with respect to the switching disk means seated upon a control shaft, whereby said switching disk means at said control shaft no longer



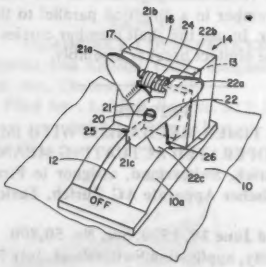
cooperate with a first group of said actuation fingers at said rotor but with a second axially offset group of said actuation fingers so that a contact arrangement-actuation wheel means actuates its associated electrical contact arrangement according to a different program as a function of the momentary position of the rotor.

3,629,529

RETAINING MEANS FOR OPERATING HANDLE OF MOLDED-CASE ELECTRIC CIRCUIT BREAKER

Robert E. Dietz, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 25, 1970, Ser. No. 13,974
Int. Cl. H02j *1/10*
U.S. Cl. 200—42 **5 Claims**



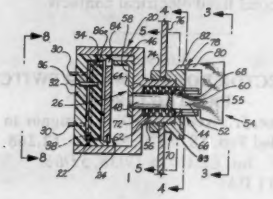
The portion of a circuit breaker casing defining an opening for a pivotable operating handle is provided with a pair of grooves respectively disposed on opposite sides of the opening adjacent an ON position of the handle and extending transversely of the direction of movement of the handle. A retaining means provided on the handle includes a pair of pivotally mounted locking members having end portions insertable respectively in the grooves to lock the handle in ON position while it is being biased toward OFF position by the internal operating mechanism of the circuit breaker.

3,629,530

ELECTRIC SAFETY SWITCH APPARATUS

Jules Fischer, 7719 Hampton Ave., Los Angeles, Calif.

Filed Feb. 27, 1970, Ser. No. 15,069
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 **11 Claims**



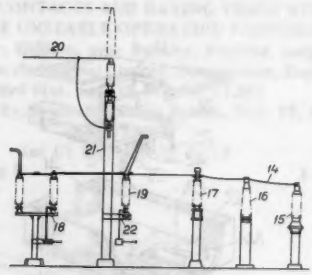
An electric safety switch apparatus of a type including an electric switch means and controllably movable switch-operating means for actuating the electric switch means between open and closed relationship with respect to an electric circuit adapted to be connected to the electric switch means and further including inactivating means effectively cooperable with respect to the switch-operating means with respect to the electric switch means for effectively preventing the actuation thereof by said switch-operating means when in any position other than a predetermined, switch-engaging, inactivating-means bypassing relationship thereof. The switch-operating means has an input portion, an output portion, and an intervening coupling portion, with said input portion including means adapted to be effectively manually moved to an extent such as to actuate said electric switch means when said switch-operating means is in said predetermined switch-engaging, inactivating-means-bypassing relationship. The apparatus includes means for properly positioning said switch-operating means for manually caused movement into said bypassing relationship when operated by authorized personnel in accordance with a preselected, position-determining manner by said means.

3,629,531

HIGH-VOLTAGE ISOLATOR WITH CONTACT TURNING ABOUT A VERTICAL AXIS

Georg Teodor Trolin, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 16, 1970, Ser. No. 29,142
Claims priority, application Sweden, Apr. 18, 1969, 5465/69
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **7 Claims**



A high-voltage isolator comprises a vertical support insulator carrying an obliquely upwardly directed isolator blade, which cooperates with a stationary countercontact suspended in a bus bar conductor. The isolator is operated by turning the support insulator at least 90° about its longitudinal axis.

3,629,532

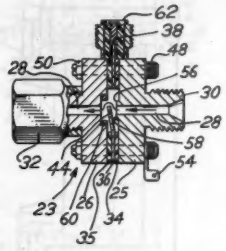
IMMEDIATELY RESPONSIVE FLUID FLOW OPERATED SWITCH WITH NORMALLY CLOSED SPRING CONTACT IN FLOW CHANNEL

Raymond Pisors, Morton Grove, Ill., assignor to Sun Electric Corporation

Original application June 7, 1968, Ser. No. 735,309. Divided and this application Feb. 20, 1970, Ser. No. 13,040

Int. Cl. H01h *35/40*

U.S. Cl. 200—81.9 R 5 Claims



A fluid flow transducer for disposition in one or more fuel feedlines of a fuel-injected engine for analyzing and timing the engine. The transducer includes a normally closed resilient movable contact in the transducer which is directly impinged by the flowing fuel to open an electrical circuit to generate signals which are indicative of the rotational speed of the engine and the frequency and time duration of fuel flow through each fuel line.

3,629,533

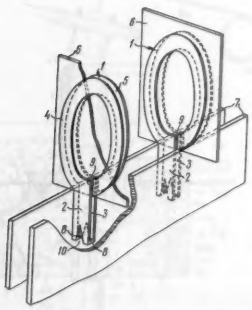
ARC-QUENCHING CHAMBER

Rostislav Sergeevich Kuznestsov, ulitsa Scherbakakovskaya, 40/42, kv. 195; Alexandr Grigorievich Uskach, ulitsa Oktyabraskaya, 49, kv. 63, and Vladimir Grigorievich Kostikov, ulitsa Davydkovskaya, 10, kv. 104, all of Moscow, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,722

Int. Cl. H01h *33/08*

U.S. Cl. 200—144 R 6 Claims



The present invention relates to electric switching devices, and more specifically to the arc-quenching chambers of such devices.

There is an arc-quenching chamber comprising a de-ion grid composed of spaced plates joined at one end with two straight portions and two helically bent portions lying in parallel planes; forming an airgap between the initial and end of the bent portions, through which any base point of a minor electric arc passes, the airgap being maintained at a minimum.

3,629,534

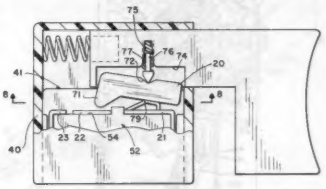
TRIGGER CONTROL SWITCH WITH PARTICULAR BRIDGING AND STATIONARY CONTACT ARRANGEMENTS

Benny L. Reviel, Irving, Tex., assignor to ECC Corporation, Euless, Tex.

Filed May 4, 1970, Ser. No. 34,345

Int. Cl. H01h *13/08*, *1/44*

U.S. Cl. 200—157 13 Claims



A switch in combination with a variable power control. A sliding actuator carries a bridging contact which continuously engages a pivot on one fixed contact and selectively engages two fixed contacts. An actuator pivot urges the bridging contact toward the fixed contacts, and the relative positions of the pivots provide positive switching between bridging and nonbridging conditions. An insulating boss separates the stationary fixed contacts, and the bridging contact never engages said boss in any switch position. A thick film circuit carries resistance elements on a surface; and a second movable contact, moved by the actuator, includes contact fingers engaging the resistance elements.

3,629,535

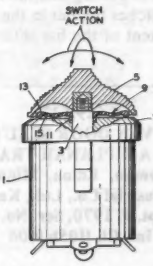
ENVIRONMENTAL SEAL FOR AN ELECTRICAL SWITCH

William J. Walters, Wayne; John G. Rusnack, Clifton, both of N.J., and Peter P. D. Chen, Flushing, N.Y., assignors to The Bendix Corporation

Filed July 1, 1970, Ser. No. 51,479

Int. Cl. H01h *9/04*

U.S. Cl. 200—168 G 13 Claims



A switch has a body member and an actuating member mounted on the body member and movable relative thereto about mutually perpendicular axes. A sealing element in the form of a disc is mounted on one member and is fixed thereto and has a flexible portion urging a circumferential

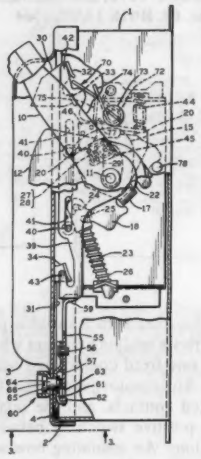
rolled band into engagement with a smooth surface on the other member to provide an environmental seal between the members.

3,629,536

SWITCH ENCLOSURE WITH SEALING MEANS OPERABLE BY SWITCH-OPERATING

Tadeusz J. Rys, Lexington, Ky., assignor to Square D Company, Park Ridge, Mich.

Filed Oct. 16, 1970, Ser. No. 81,392
Int. Cl. H01h 9/04, 9/06
U.S. Cl. 200—168 G **6 Claims**



The switch enclosure comprises a box within which a switch-operating mechanism is mounted. An external operating handle is operable to cause the mechanism to move to ON and OFF switch positions. The box is closed by a hinged door, and a sealing gasket is provided between the door and box. A combined sealing and latching bar in the box is arranged to draw the door into, and hold it in, closed sealing engagement.

The invention is characterized in that a ratchet connection is provided between the switch-operating mechanism and the bar for moving the bar into sealing and latching position when the handle is operated to move the switch-operating mechanism a predetermined distance toward ON position and to release the mechanism from the bar, and permit return of the mechanism to OFF position by the handle, while the bar remains in sealing and latching position. An interlock on the door latches the bar in the sealing and latching position upon movement of the bar into said position by the mechanism.

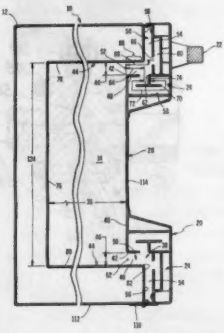
3,629,537

MICROWAVE OVEN DOOR SEAL HAVING DUAL CAVITIES FED BY A BIPLANAR TRANSMISSION LINE

Duane Buford Haagensen, Edina, Minn., assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Sept. 9, 1970, Ser. No. 70,641
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **26 Claims**

A microwave oven door seal is established when an access opening of a heating cavity is closed by a door. The seal includes a biplanar transmission line which extends in a first direction from within the heating cavity to a point outside the heating cavity. At such point, the biplanar transmission line turns and extends in a second direction away from the access opening. A first electromagnetic wave filter is fed by the first portion of the biplanar transmission line and a second electromagnetic wave filter is fed by the second portion of the biplanar transmission line for reducing the amount of electromagnetic wave energy which leaks from the heating cavity. The filters are cavities which are located along the biplanar transmission line and are designed to occupy a minimum of space to provide room for an observation window in the door. To improve the effectiveness of the seal on



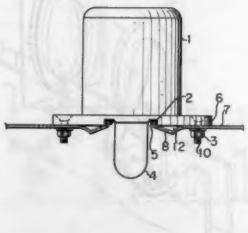
one side of the heating cavity in the event the door is pivotally mounted to an opposite side of the heating cavity the door is mounted so that it extends from the opposite side toward the one side at an obtuse angle relative to a wall at the one side of the heating cavity. As a result, both the width and the length of the first portion of the biplanar transmission line on such one side decrease so that the sealing characteristics thereof remain relatively constant during an initial opening movement of the door.

3,629,538

MAGNETRON MOUNTING DEVICE IN AN ELECTRONIC RANGE

Masataka Suzuki, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,404
Claims priority, application Japan, Oct. 23, 1969, 44/100838
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **3 Claims**



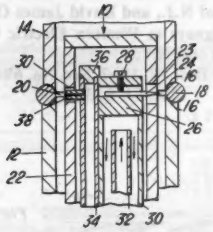
In an electronic range, in order to prevent the leakage of electromagnetic waves through the opening provided on the baseplate of the range for inserting the antenna projecting from the magnetron, the baseplate is shaped to have a special shape in the neighborhood of the opening so that the electromagnetic waves are prevented from their leaking out from the neck of the magnetron.

3,629,539

BORE WELDING

Daniel F. T. Roberts, Baxley, England, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Feb. 26, 1970, Ser. No. 14,292
Claims priority, application Great Britain, Feb. 26, 1969, 10,405/69
Int. Cl. B23k 9/02
U.S. Cl. 219—60 A 4 Claims



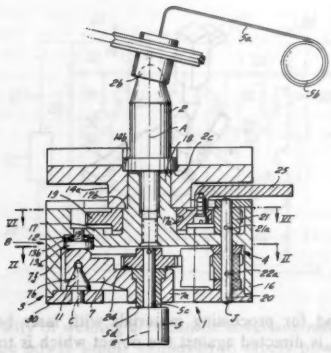
This invention relates to the correct positioning of the non-consumable electrodes of inert gas shielded arc welding torches. According to the invention a welding torch is provided with probe means comprising a jet of an inert gas. Inert gas is supplied to this jet and the back pressure or flow rate of this gas is measured to align the jet with the joint to be welded. Once the jet has been aligned with the joint, the electrode is at a position relative to the torch which is known from the construction of the torch and so can be accurately positioned relative to the joint ready for welding.

3,629,540

SPARK EROSION HEAD WITH MEANS FOR ROTATING AND GYRATING THE ELECTRODE

Hans Altfeld, Constance, and Ewald Sauter, Litzelstetten, both of Germany, assignors to Altfeld & Co. GmbH, Constance (Bodensee), Germany

Filed June 29, 1970, Ser. No. 50,803
Claims priority, application Germany, July 3, 1969, P 19 33 775.8
Int. Cl. B23p 1/12
U.S. Cl. 219—69 V 9 Claims



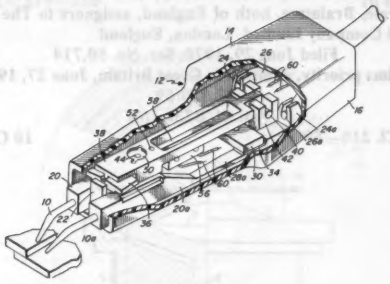
The electrode-carrying head of an electrodischarge machining (EDM) apparatus includes a planetary-gear arrangement for rotating the electrode about its own axis as the electrode axis is, in turn, displaced relatively to the workpiece. This system enables the use of an electrode for various machining modes and eliminates the need for tool electrodes precisely complementary to the configuration to be produced.

3,629,541

HAND-HELD SERIES WELDING TOOL

James R. Mims, Acton, and Palmer P. Derby, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 1, 1970, Ser. No. 77,087
Int. Cl. B23k 9/28
U.S. Cl. 219—78 8 Claims



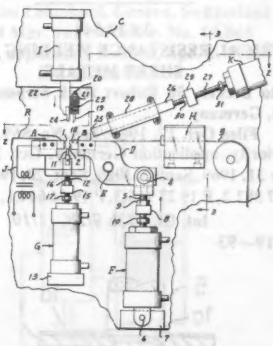
A hand-held series welding tool which comprises a casing having two movable spaced electrodes interconnected by a pivot bar which transfers equalized forces from one electrode to the other, and switch means connecting the electrodes to a power supply for initiating a welding cycle when such forces reach a predetermined adjustable level.

3,629,542

MANUFACTURE OF WIRE TERMINALS

Allan S. Warner, 6 Tudor Court, Elizabeth, N.J.

Filed May 25, 1970, Ser. No. 40,060
Int. Cl. B23k 9/12
U.S. Cl. 219—79 9 Claims



A strip of metal is fed longitudinally in steps at the end of each of which the leading end portion of the strip lies across the space between two spaced opposed electrodes adapted to be connected in an electric fusing or welding circuit and in one of which is a fixed cutting blade. A complemental blade and forming finger are moved together relatively to and

cooperate with said fixed cutting blade and said electrodes respectively to sever the leading end portion of the strip and to press it into a channel-shaped clip between said electrodes and a stop plate. Wires are inserted into the clip and the clip and wires are squeezed between the electrodes to tightly compress the wires in the clip and to press together the edge portions of the sidewalls of the clip. Then the fusing circuit is energized to fuse together the contacting portions of the clip and wires, after which the circuit is deenergized the wires are cut, the electrodes are separated, and the clip with the wires fused therein is ejected.

3,629,543

SOLDERING AND UNSOLDERING MACHINES

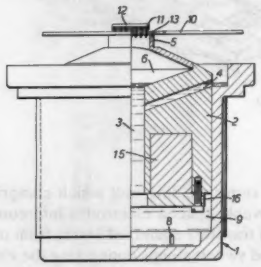
Antony James Mayhew, Billericay, and Leonard Frederick Cheale, Braintree, both of England, assignors to The Marconi Company Limited, London, England

Filed June 29, 1970, Ser. No. 50,714

Claims priority, application Great Britain, June 27, 1969, 32,520/69

Int. Cl. B23k *1/02*

U.S. Cl. 219—85 **10 Claims**



This invention provides a machine for simultaneously soldering or unsoldering a multiple connection component on a printed circuit board. The machine consists of a pot suitable for holding liquid at a temperature above the melting point of solder. A piston is fitted in the pot, and there is a channel passing through the piston. When the piston is depressed the hot liquid held in the pot rises up through the channel. The component to be soldered or unsoldered is positioned so that the surface of the hot displaced liquid comes in contact with the joints to be soldered or unsoldered.

3,629,544

ELECTRICAL RESISTANCE WELDING OF COATED SHEET METALS

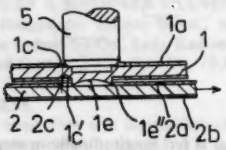
Alfred Otto Becker, 56 Robert Rock Strasse, D-6600 Saarbrucken, Germany

Filed Oct. 27, 1969, Ser. No. 869,668

Claims priority, application Germany, Oct. 26, 1968, Nov. 7, 1968, May 31, 1969, Sept. 3, 1969, Sept. 20, 1969; P 18 05 361.7, P 18 07 382.2, P 19 27 915.3, P 19 44 614.1, P 19 47 771.5

Int. Cl. B23k *9/28, 11/10*

U.S. Cl. 219—93 **25 Claims**



The invention provides a method for the electrical resistance welding of coated sheet metals, in which welding current is fed to at least one of the coated sheets indirectly through the metal layer thereof and contact is established between blank areas thereof to be welded to each other, wherein annular or elongated knife edges are provided at the welding area of the sheet metal to be welded on or on intermediate welding pieces, and cavities are produced by embossing and/or by milling, for preserving an outer coating undamaged by the heat of welding.

3,629,545

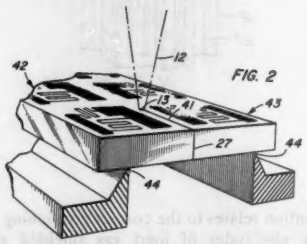
LASER SUBSTRATE PARTING

Charles Eckner Graham, Dover; Robert Miller Lumley, Trenton, both of N.J., and David James Oberholzer, Allentown, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 19, 1967, Ser. No. 691,883

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 L **14 Claims**



A laser beam is applied to a substrate to separate the substrate at that portion of the substrate to which the laser beam is applied and the laser beam is displaced relative to the substrate to part or separate the substrate along a path defined by such relative displacement. A localized fracture, which extends entirely through the substrate but which is restricted to the portion of the substrate to which the laser beam is applied, may be generated without deleterious damage to the substrate. By displacing the laser beam along a desired path, the fracture is propagated along the desired path to separate or part the substrate.

3,629,546

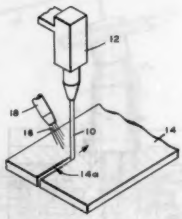
AIR-COOLED LASER PROCESSING OF MATERIALS

Franklin Hornor Fry, Appleton, Wis., assignor to American Can Company, New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,763

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 L **8 Claims**

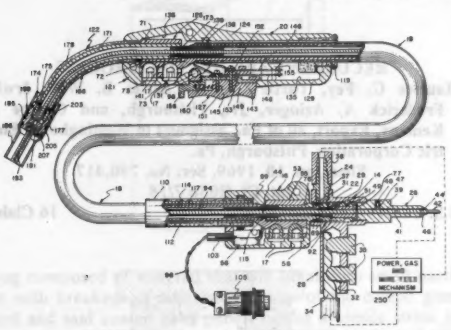


A method for processing materials with laser beams. A laser beam is directed against the object which is to be cut, welded or joined. A generated stream of air is directed over the object so that cooling air passes over the immediate area or location at which the laser beam strikes. The combination of the directed laser beam and the air stream is such that the cut or welded joint is left free from scorching or surface deformation due to overheating and burning.

3,629,547
SEMIAUTOMATIC WELDING APPARATUS

Jack R. Kester; Ray D. Multhaup; William R. Roberts; Raymond L. Townsend, and Kenneth A. Young, all of Wichita, Kans., assignors to Tweco Products, Inc., Wichita, Kans.

Filed Feb. 9, 1970, Ser. No. 9,623
Int. Cl. P23k 9/00
U.S. Cl. 219—130 4 Claims

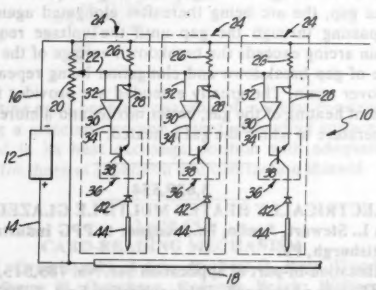


This invention is a welding apparatus operable to automatically provide an electrode surrounded by a shielding gas for welding through an arc-welding process. More particularly, this invention is a welding apparatus having a welding gun assembly connected through a cable assembly to a quick connector assembly which, in turn, is adapted to be inserted within a supply adapter assembly to transfer gas, welding wire, and electrical power to the welding gun assembly. Additionally, this invention relates to a welding apparatus operable to supply welding wire while having structural features (1) allowing for the ready disconnecting and connecting to a supply source, and (2) to maintain the gun assembly in a cool condition during welding operations; and (3) achieving lightweight features for ease of usage.

3,629,548
MULTIARC WELDING

Henry V. Rygiol, 16437 E. Janine, Whittier, Calif.

Filed Jan. 18, 1971, Ser. No. 107,332
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 14 Claims

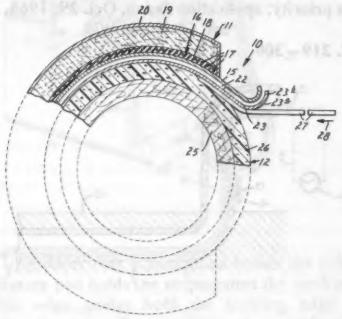


A plurality of welding arcs can be simultaneously powered by a single power supply employed to supply power to each of these arcs through separate welding circuits corresponding to each of these arcs. Each of the welding circuits involved is constructed so as to include a means for creating a voltage drop such as a resistor, a means for regulating current flow such as a transistor means, an electrode to be used in creating an arc and a voltage comparison means such as an operational amplifier for controlling the operation of the means for regulating current flow. The voltage comparison means means in each of the welding circuits is connected to a reference means for producing a reference voltage so as to operate to control the means for regulating current flow in accordance with the voltage at the reference means and at the means for creating a voltage drop.

3,629,549
HEATING DEVICE

John A. Svendsen, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1969, Ser. No. 888,412
Int. Cl. H05b 1/00
U.S. Cl. 219—216 10 Claims

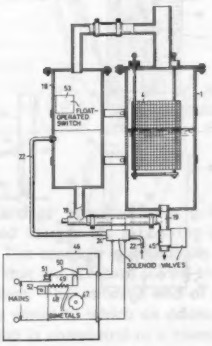


A heating device for producing graphic images on sheet material. The device includes a novel travels platen that provides an even amount of heat over the whole heating surface of the heating platen. The heating platen includes a heat source, an exterior heat conductive plate having on one side a heating surface adapted to contact and conduct heat to sheet material, and a sheetlike spacer between the heat source and exterior heat-conductive plate that conducts heat more rapidly along its length than through its thickness and thereby spreads heat from the heat source as it travels to the exterior heat-conductive plate.

3,629,550
APPARATUS FOR THE PRODUCTION OF STEAM FOR HUMIDIFYING AIR

Bengt Henry Carlsson, Goteborg, Sweden, assignor to Kristofer Joakim Lehmkuhl, Geneva, Switzerland

Filed Mar. 16, 1970, Ser. No. 19,865
Claims priority, application Sweden, Apr. 2, 1969, 4753/69
Int. Cl. H05b 3/60
U.S. Cl. 219—285 1 Claim



An apparatus for the production of steam for air humidifying purposes, in which water is vaporized in an electrode

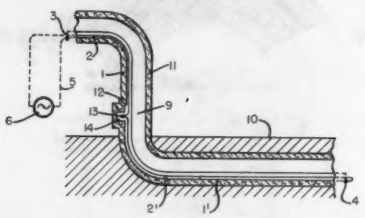
container by passing current through the water between electrodes. For water level control a further container is provided communicating with the electrode container, and to which a water refill conduit is connected provided with an electrically operated valve. An energy regulator is electrically connected to the valve and is adjustable in such a manner that the current supply to the valve and thus also the water level in the electrode container can be determined.

3,629,551

CONTROLLING HEAT GENERATION LOCALLY IN A HEAT-GENERATING PIPE UTILIZING SKIN-EFFECT CURRENT

Masao Ando, Yokohama-shi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Oct. 22, 1969, Ser. No. 868,521
Claims priority, application Japan, Oct. 29, 1968, 43/78735
Int. Cl. H05b *3/00*
U.S. Cl. 219—300 **6 Claims**



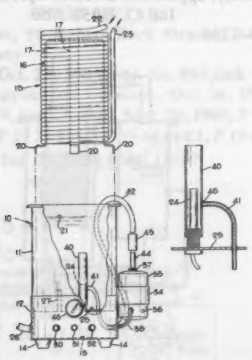
In a heat-generating pipe comprising a ferromagnetic pipe and an insulated conductor line installed therethrough wherein an AC flows through concentratedly in the inner skin region thereof due to the skin effect of AC heat quantity generated in the heat generating pipe is locally controlled by changing one or more factors of those consisting of cross-sectional area of the conductor line, resistivity of the same, inside diameter of the ferromagnetic pipe, resistivity of the same and permeability of the same.

3,629,552

HEATING DEVICE FOR PARENTERAL FLUID

John D. Edging, East St. Louis, Ill., assignor to Lila Lee Edging, St. Louis, Ill., a part interest

Filed June 25, 1969, Ser. No. 836,499
Int. Cl. F24h *1/20;* **H05b** *1/00;* **B67d** *5/62*
U.S. Cl. 219—302 **6 Claims**



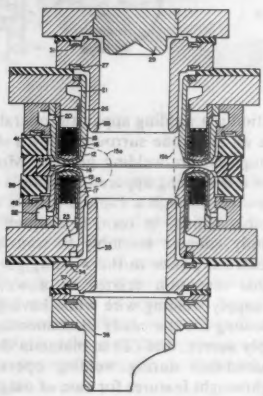
A heating device for parenteral fluid includes a container holding a quantity of heat transfer liquid to which heat is imparted by a thermostatically controlled electric immersion heating element. A coil of flexible plastic tubing having adjacent coil turns fused together to form a disposable coil envelope for conveying the parenteral fluid from a reservoir to the patient is suspended within the heat transfer liquid by means of an independent, removable support frame which holds the coil envelope in an open cylindrical configuration to facilitate heat transfer from the liquid to the parenteral liquid flowing through the envelope. The frame includes extensions removably engageable with seating portions in the container. The circulation of the heat transfer liquid about the envelope is augmented by an aeration system.

3,629,553

RECURRENT ARC HEATING PROCESS

Maurice G. Fey, Turtle Creek; Charles B. Wolf, Irwin; Frederick A. Azinger, Jr., Pittsburgh, and George A. Kemeny, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1969, Ser. No. 790,417
Int. Cl. H05b *7/18*
U.S. Cl. 219—383 **16 Claims**



A process for heating gas or fluid which comprises passing the gas or fluid through a gap between electrodes having an arc therebetween at a very high velocity while a system voltage is continuously maintained sufficient to cause breakdown at the gap. The high-velocity gas elongates the arc until the arc voltage required for electrical conduction exceeds the breakdown voltage of the gap whereupon sparkover occurs in the gap, the arc being thereafter elongated again by the gas passing through the gap until the voltage required to sustain arcing exceeds the breakdown voltage of the gap, the cycle of gap breakdown and elongation being repeated over and over again. The greatly extended arc provides for more efficient heating of the gas, better mixing and a more uniform temperature to which the gas is heated.

3,629,554

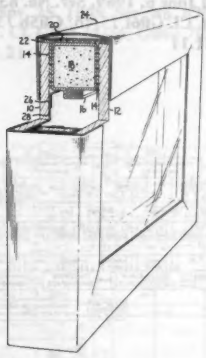
ELECTRICALLY HEATED MULTIPLE GLAZED UNIT

John L. Stewart, Apollo, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 785,515, Dec. 20, 1968, now abandoned. This application Sept. 2, 1970, Ser. No. 68,989
Int. Cl. H05b *3/06, 3/04*
U.S. Cl. 219—522 **5 Claims**

An electroconductive multiple glazed unit comprising a plurality of transparent glass panels spaced from one another and sealed around their edges to unite said panels into a substantially rigid structure and provide a hermetically sealed space therebetween. A transparent electroconductive coating

on the inner surface of at least one of said glass panels and bus bars bonded to said inner surface of said one of said glass panels and in electrical contact with said electroconductive coating. The bus bars and the electroconductive coating each



being composed of material that will break into small particles with breakage of adjacent portions of the coated glass panel and said coated glass panels having a tensile strain in the area occupied by said bus bars in excess of about 2,000 millimicrons per inch.

3,629,555

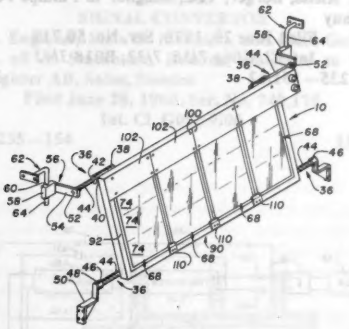
HEATING APPARATUS FOR A PRINTING PRESS

William C. Herbert, Jr., Mill Neck, N.Y., assignor to Herbert Products International, Westbury, N.Y.

Filed July 6, 1970, Ser. No. 52,541

Int. Cl. H05b *3/06*

U.S. Cl. 219—525 **4 Claims**



A printing press heating apparatus of modular construction providing a selected size and extent of heating surface and supported in its heat exchange position with adequate allowance for thermal expansion and contraction thereof.

3,629,556

CARD-READING MECHANISM

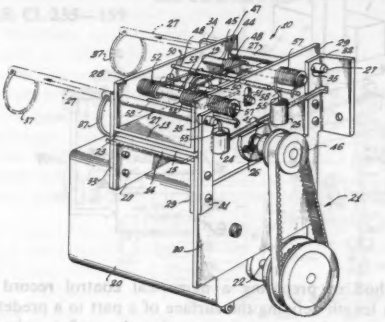
Walter J. Orzechowski, Arleta; Herbert D. Pace, Woodland Hills; Bruce H. Osterberg, Redondo Beach; William W. Caldwell, Palos Verdes Estates, and Arthur J. Murphy, Northridge, all of Calif., assignors to Western Data Products, Inc., Los Angeles, Calif.

Filed Oct. 20, 1969, Ser. No. 867,535

Int. Cl. G06k *7/04*

U.S. Cl. 235—61.11 B **12 Claims**

A mechanism for reading encoded data on a strip on credit cards of varying sizes and formats as the cards are passed through a slot past a transducer, the strip on each card being positioned on a flat surface of the card along a longitudinal edge thereof. The mechanism has two spaced walls defining the slot and spaced to receive all of the cards loosely, and has a guide wall against which the locating edge of the cards is pressed. A pair of rollers engage opposite sides of the card alongside the strip, one roller locating the flat surface in a reference plane for engagement of the strip with a working



face of the transducer that is positioned beside the reference plane. A pressure pad holds the strip against the working face and yieldable edge guides hold the locating edge firmly against the locating edge. For simplicity of assembly and disassembly, the various elements are mounted in two subassemblies on channellike pieces held in back-to-back spaced relation on opposite sides of the card slot by quick-release connectors.

3,629,557

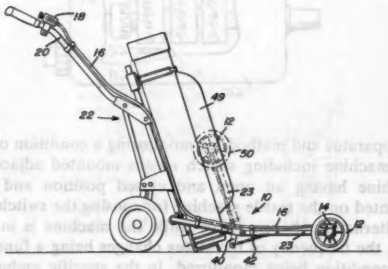
YARDAGE INDICATOR

Armand R. Lareau, 271 Pleasant St., Leominster, Mass.

Filed June 2, 1970, Ser. No. 42,768

Int. Cl. G01c *22/00*

U.S. Cl. 235—95 **10 Claims**

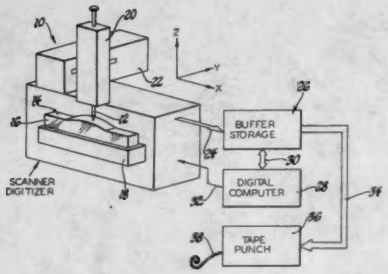


A wheeled carriage attached to a golf cart having an odometer secured thereto for measuring distance traversed by the carriage. The carriage is principally comprised of two tubular sections that are pivotally joined to a bracket serving as a universal joint. The outward end of the outer tubular section carries a wheel to which an odometer worm gear is attached. The gear is connected to a counter via a cable for translating rotary motion of the wheel into distance traveled by the cart. The tubular section mounting the wheel may be folded against the cart for compact storage.

3,629,558
METHOD FOR PREPARING CONTROL TAPES

James R. Coggin, Dayton, Ohio, assignor to The Bendix Corporation

Filed Sept. 12, 1969, Ser. No. 857,402
Int. Cl. G06f 15/46
U.S. Cl. 235—151.1 9 Claims

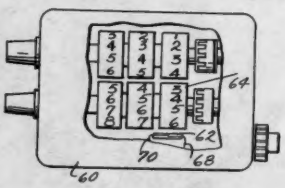


A method of preparing a numerical control record of minimum length defining the surface of a part to a predetermined degree of accuracy by scanning the surface, placing the coordinates of a plurality of measured points in temporary storage, optimizing the data by examining each point to determine whether its chord height equals or exceeds a reference value, and transferring to the control record only those points determined on the basis of the chord height measurement to be required for adequate surface definition. A computer controlled apparatus for performing the method is disclosed.

3,629,559
ANALOGUE TO DIGITAL CONVERTERS

Lewis E. Cassaday, Greenwood, S.C., assignor to Greenwood Mills, Greenwood, S.C.

Filed Nov. 8, 1968, Ser. No. 774,420
Int. Cl. G07c 3/10
U.S. Cl. 235—92 PD 12 Claims

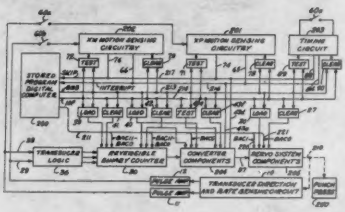


Apparatus and method for monitoring a condition of a textile machine including switch means mounted adjacent the machine having an open and closed position and means mounted on the textile machine for causing the switch means to alternately change status while the machine is in operation, the frequency of the status changes being a function of the condition being monitored. In the specific embodiment disclosed, a reed switch is mounted adjacent one of the dials on a hank counter which carries a portion of magnetic material within it so that the reed switch is periodically closed as the hank counter dial rotates to indicate the production of a given amount of material. The reed switch is attached to appropriate electrical circuitry so that a first electrical condition results when the switch is closed, and a second condition when the switch is open and the electrical conditions are periodically polled at a frequency greater than the frequency at which the switch condition changes so that all changes of status are detected and so that each change represents a specific quantity of output material produced.

3,629,560
APPARATUS FOR CONTROLLED DECELERATION IN NUMERICAL POSITIONING

Kenneth Leonard Slawson, Depew, N.Y., assignor to Houdaille, Buffalo, N.Y.

Filed June 6, 1969, Ser. No. 831,131
Int. Cl. G06f 15/46; G05b 15/00
U.S. Cl. 235—151.11 8 Claims

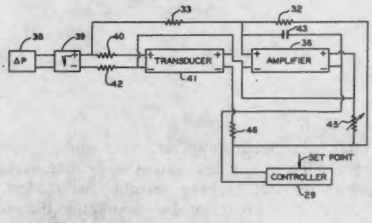


A control system wherein a supervising computer is operable to observe acceleration and deceleration characteristics of the particular control system and then to compute optimum deceleration points with respect to subsequent commands to the system on the basis of the observed characteristics and to initiate deceleration of the system at the optimum points in executing the successive commands to the system.

3,629,561
INTERNAL REFLUX COMPUTER FOR FRACTIONATION COLUMN CONTROL

Louis D. Kleiss, Borger, Tex., assignor to Phillips Petroleum Company

Filed June 29, 1970, Ser. No. 50,719
Int. Cl. G06g 7/58, 7/32; B01d 3/42
U.S. Cl. 235—151.12 3 Claims



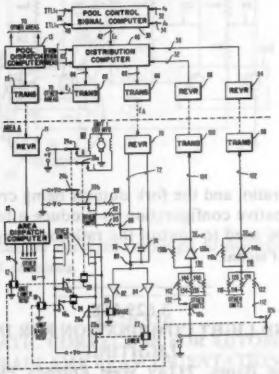
Internal reflux in a fractionation column is computed from measurements of the temperatures of overhead vapor and external reflux and the rate of flow of external reflux. The temperatures are sensed by temperature sensitive resistance elements which constitute the feedback and input resistors, respectively, of an amplifier employed to make the computation.

3,629,562

CONTROL FOR POWER POOLS

Frederick B. Davis, 3rd, Drexel Hill, and Charles W. Ross, Hatboro, both of Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed Nov. 25, 1969, Ser. No. 879,646
Int. Cl. G06f *15/56*; G06g *7/62*
U.S. Cl. 235—151.21 6 Claims



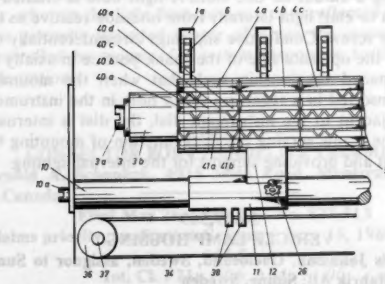
The load of a pool is distributed among the units of its interconnected areas by allocating load to the areas in accordance with signals received from each area representative of the generation change capability of the units in that area.

3,629,563

SIGNAL CONVERTOR

Gosta R. Englund; Mats E. Mattsson, and Claes-Goran Lindelow, all of Stockholm, Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed June 26, 1968, Ser. No. 740,175
Int. Cl. G08c *9/06*
U.S. Cl. 235—154 13 Claims



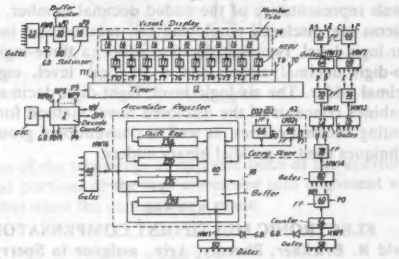
A device for converting the value in a mechanical register, into electrical output signals. Tracks between each tooth of each gear of the register contain the value of the teeth in binary form. In setting the gears, the tracks are aligned to form a continuous track passing through all the gears of the register. A sensing finger which is connected to a photocell runs through this continuous track to convert the setting in the register gears to electrical output signals.

3,629,564

CALCULATING MACHINES WITH A CONSTANT FUNCTION KEY

James John Drage, and Norbert Kitz, both of Middlesex, England, assignors to Bell Punch Company Limited, London, England

Filed July 25, 1969, Ser. No. 844,920
Claims priority, application Great Britain, Feb. 17, 1969, 8,576/69
Int. Cl. G06f *3/02*
U.S. Cl. 235—159 12 Claims



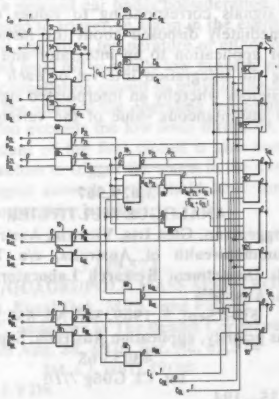
There is disclosed electronic calculating machine with at least two registers for storing numbers and transferring them between registers. The numbers are read by a sequence of ten pulses for each of the digits of a number which provide output pulses as the register digit stages become zero. Transfer of data between the registers is effected by means of gates which receive the output pulses and further control signals. The gates are controlled by a function control circuit with a constant function key which will enable the number to be held in the register and prevent a new number from being entered.

3,629,565

DECIMAL ADDER FOR DIRECTLY IMPLEMENTING BCD ADDITION UTILIZING LOGIC CIRCUITRY

Martin S. Schmookler, Poughkeepsie, and Arnold Weinberger, Newburgh, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,246
Int. Cl. G06f *7/50*
U.S. Cl. 235—174 7 Claims



An improved method and logic system for adding two decimal numbers which are coded in a four-bit binary form.

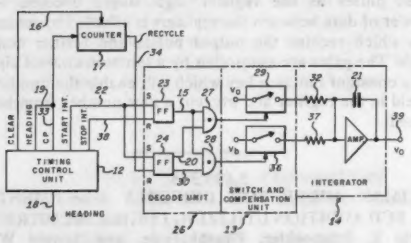
The method includes generating a propagate carry signal P_i for each of the four bits which is the OR function of the bit inputs, generating a generate carry signal G_i for each of the four bits which is the AND function of the bit inputs, and generating a binary carry C_i for the first bit. The decimal carry for the addition is then generated by a novel carry look-ahead technique by employing these signals: P_i, G_i, and the binary carry C_i. The binary coded decimal bit signals representative of the decimal sum are also generated directly from these signals and, hence, the adder differs from prior art decimal adders which first performed binary addition in each bit and then added 6 to these binary sums whenever a decimal carry occurred so as to produce corrected binary signals representative of the coded decimal number. Several systems are disclosed employing this method and include a four-logic level, two-digit decimal adder, a three-logic level, two-digit decimal adder; and a six-logic level, eight-digit decimal adder. The six-logic level, eight-digit decimal adder combines concepts of the disclosed novel method for implementing decimal carries, as well as conventional group carry techniques used in parallel binary adders.

3,629,566

ELECTRONIC MULTIPOINT COMPENSATOR

David R. Brickner, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Nov. 26, 1969, Ser. No. 880,037
Int. Cl. G06g 7/30; G06f 15/32
U.S. Cl. 235—183 **7 Claims**



Signal-compensating apparatus comprising a storage device containing a plurality of deviation signals corresponding to predetermined values of a variable signal and two serially connected counters for providing a digital signal representative of the instantaneous value of the variable signal, the counters being operative in conjunction with a timing unit and switching array for successively selecting the deviation signals corresponding to values of the variable signal immediately disposed about the instantaneous value thereof for application to an integrator and simultaneously controlling the integration interval of each of the selected deviation signals whereby an interpolated signal corresponding to the instantaneous value of the variable signal is obtained.

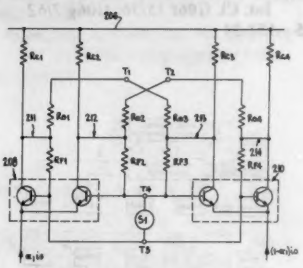
3,629,567

ANALOGUE MULTIPLIER

Harro Bruggemann, Glen Iris, Victoria, Australia, assignor to The Commonwealth of Australia, c/o The Postmaster Generals Department Research Laboratories, Melbourne, Victoria, Australia

Filed Sept. 5, 1969, Ser. No. 855,543
Claims priority, application Australia, Sept. 15, 1968, 43033/68
Int. Cl. G06g 7/16
U.S. Cl. 235—194 **26 Claims**

An analogue multiplier stage which in use receives a first input signal represented by a pair of input currents and comprises a pair of current forks which divide the input currents in a predetermined ratio, the outputs the forks being cross-connected in one configuration to produce an output signal represented by a pair of output currents from the stage and representative of a product of the input signal and a term involving the ratio, and the fork outputs being cross-connected in the alternative configuration to produce a feedback signal which can be used to control the ratio by comparison with a second input signal.

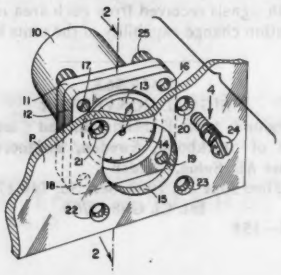


3,629,568

SCREW AND LIGHT COMBINATION FOR INSTRUMENT LIGHTING

Arnold Loyd Hanes, 21149 West Entrada Place, Topanga, Calif.

Filed July 13, 1970, Ser. No. 54,111
Int. Cl. G01d 11/28
U.S. Cl. 240—2.1 **8 Claims**



A mounting screw for an instrument includes a shank portion having a cutout on one side. A light bulb is cradled in the cutout to emit light laterally from one side relative to the axis of the screw. Conductive slip rings circumferentially extend over the opposite side of the shank portion in axially insulated spaced relationship such that when the mounting screw is inserted in a receiving screw hole in the instrument casing adjacent to the instrument dial, the dial is internally lighted, the screw serving the dual function of mounting the instrument and providing support for the internal lighting.

3,629,569

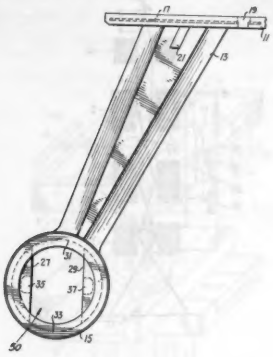
VEHICLE LAMP HOUSING

John Gillis Johnsson, Oxelosund, Sweden, assignor to Sunne Gummifabrik AB, Sunne, Sweden

Filed Apr. 1, 1969, Ser. No. 811,721
Int. Cl. B60q 1/00
U.S. Cl. 240—7.1 **4 Claims**

A housing for a vehicle indicator lamp comprises a rubber body forming an attachment base, an elongated arm and a head at the end thereof. The head is shaped as a short sleeve, and opposite ends thereof are closed by rigid transparent covers which are inserted with their circular edges into grooves in the elastic head, thereby stiffening the same. A tubular electric bulb extends across the cavity of the head, and

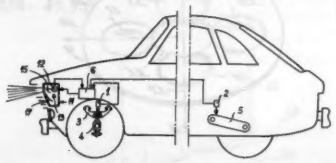
its end caps are inserted into recesses in the rubber walls thereof. Only when the covers have been taken out, the rubber head can be deformed enough to disengage the bulb caps from said recesses.



3,629,570
AUTOMATIC CORRECTOR FOR AUTOMOTIVE HEADLAMP BEAM ORIENTATION

Pierre Bouthors, and Francois Archaux, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France

Filed June 23, 1969, Ser. No. 835,348
Claims priority, application France, Aug. 1, 1968, 161498
Int. Cl. B60q *1/00*
U.S. Cl. 240—7.1 **6 Claims**



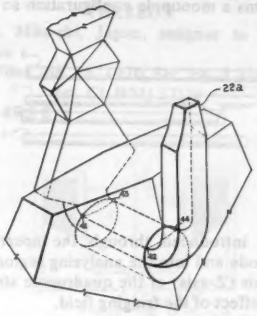
Automatic device for varying the orientation of the light beam emitted by the headlamps of an automobile vehicle, said headlamps comprising each a light source and a reflector, wherein the light from said source is reflected by at least one pivotally mounted mirror of which the movements are controlled by means of a system responsive to the vehicle orientation.

3,629,571
CONNECTOR FOR CHANDELIER TRIMMINGS

Arnold A. Schonbek, 4918 Mira Road, Montreal, Quebec, Canada

Filed May 26, 1969, Ser. No. 827,513
Claims priority, application Germany, June 14, 1968, P 17 72 647.5
Int. Cl. F21v *5/06;* **A44c** *11/00*
U.S. Cl. 240—153 **14 Claims**

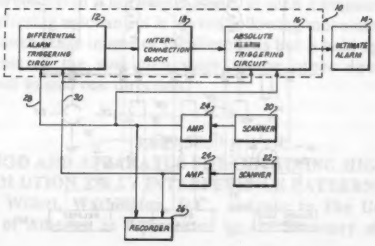
A connector for chandelier trimmings where the trimmings are provided with circular apertures to receive the connector. The connector is a preformed U-shaped member consisting of a bight portion and a pair of legs which are passed through the apertures of an adjacent pair of trimmings. The bight portion has a fixed predetermined length to assure uniform spacing of the trimmings. The legs have an oblong, rectangular cross section with a diagonal only slightly smaller than the diameter of the apertures to resist turning of the trimmings about the longitudinal axis. Such turning is further prevented by wide shoulders on the bight portion which overlap faces of the trimmings at opposite sides of the apertures. Free end portions of the legs are closed into alignment with each other when the connection is made.



3,629,572
HOT BOX DETECTOR ALARM MONITOR

Cornelius A. Gallagher, Syosset, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,219
Int. Cl. B61l *3/10*
U.S. Cl. 246—169 R **6 Claims**



An alarm circuit monitor for use with railroad car hot box detection equipment is provided. The monitor, which is connected to hot box detectors adapted to generate signals responsive to the temperature of the bearings on both sides of each axle of a railroad car under consideration, includes a first circuit adapted to trigger an alarm in the event the signal responsive to the operating temperature of either bearing exceeds a threshold level for normally low running temperature bearings and a cancellation circuit to prevent the first circuit from triggering the alarm if the operating temperature of the other bearing also exceeds the low level threshold. A second circuit independent of the first circuit is also connected to the hot box detectors to trigger the alarm in the event the hot box detector signal exceeds a threshold level for normally high running temperature bearings.

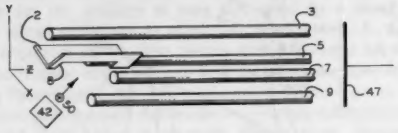
3,629,573
MONOPOLE/QUADRUPOLE MASS SPECTROMETER

John P. Carrico, Royal Oak, Mich., and Patrick F. McGinnis, Pittsford, N.Y., assignors to The Bendix Corporation

Filed Aug. 20, 1970, Ser. No. 65,574
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 DS **14 Claims**

This invention combines an auxiliary apertured electrode with a quadrupole type mass filter. The assembly comprises a quadrupole arrangement with at least one of the poles of the

filter extending beyond the others. Beneath the extended electrode is a V-shaped electrode having an aperture therein for tne passage of ions. The extended rod and the V-shaped electrode forms a monopole configuration so that ions to be



analyzed are introduced through the aperture in the V-shaped electrode and into the analyzing region at an angle to the central axis (Z-axis) of the quadrupole structure thereby reducing the effect of the fringing field.

3,629,574

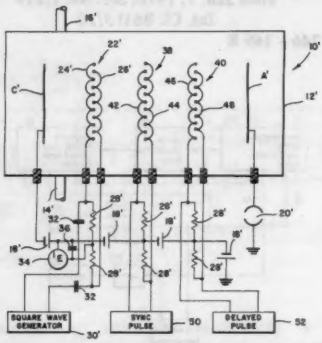
APPARATUS AND METHODS FOR SEPARATING ELECTRONS FROM IONS

David I. Carroll, Lantana, Fla., assignor to Franklin Gno Corporation, West Palm Beach, Fla.

Filed Jan. 28, 1969, Ser. No. 794,742

Int. Cl. H01j *39/34*; B01d *59/44*

U.S. Cl. 250—41.9 TF **24 Claims**



Electrons are separated from ions by subjecting these charged particles to a drift field to cause them to move from a first region toward a second region and by interposing an electron filter in the drift field between said regions, the filter comprising a pair of grid members to which high-frequency alternating voltages are applied. This principle is applied to an electron capture detector and to a device which separates and detects ions in accordance with their mobility.

3,629,575

ELECTRON MICROSCOPE HAVING OBJECT LIMITING AND CONTRAST INTENSIFYING DIAPHRAGMS

Christiaan Johannes Rakels, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 652,804, Dec. 5, 1969, now abandoned , which is a continuation of application Ser. No. 883,671, Dec. 20, 1969, now abandoned. This application Oct. 19, 1970, Ser. No. 82,141

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 A **1 Claim**

An electron-microscope employing a contrast limiting diaphragm and an object-limiting diaphragm between the objective lens and a control lens, a current control device being provided to adjust the energizing current for the objective lens to a fixed value lying outside of a normal control range whereby the focal plane of the objective lens facing the

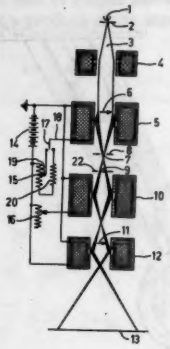


image is shifted from the contrast-intensifying diaphragm to the object-limiting diaphragm.

3,629,576

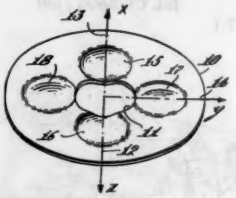
ACCELERATOR TUBE ELECTRODE FOR FOCUSING A BEAM OF CHARGED PARTICLES

Harald A. Enge, Winchester, Mass., assignor to Deltaray Corporation, Winchester, Mass.

Filed May 21, 1970, Ser. No. 39,461

Int. Cl. H01j *37/12, 37/30*

U.S. Cl. 250—49.5 C **15 Claims**



An electrode for use in an accelerator tube, which electrode provides for the focusing of a beam of charged particles within said tube as the particles travel along the length thereof. The electrode has a centrally located aperture and, symmetrically disposed about such aperture, an even number (at least four or more) of indentations, alternately projecting in opposite directions along the axis of the tube. The ideal shape of the electrode can be expressed mathematically as $z=f(r)\cos n\theta$ in a cylindrical coordinate system having coordinates r, θ, and z with the Z-axis corresponding to the direction of the tube axis. Here, $f(r)$ is a function which preferably should approximate $f(r)\approx kr^2$, for the region substantially immediately surrounding the aperture and, preferably, up to a radius of twice the aperture radius.

3,629,577

METHOD AND APPARATUS FOR PRODUCING A STEREO IMAGE BY ELECTRON MICROSCOPY

Ulrich Weber, Karlsruhe, and Jurgen Gullasch, Mindersiachen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 22, 1969, Ser. No. 859,791

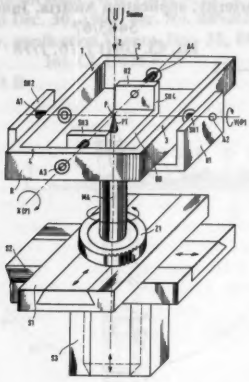
Claims priority, application Germany, Sept. 23, 1968, P 17 89 019.6

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 A **11 Claims**

For producing a stereo image, for example of a crystalline object, by electron beam microscopy, any chosen surface

area of the object is rotated about a central axis defined by the direction of the electron beam. The amount of rotation is such that after a subsequent tilting of the object about a



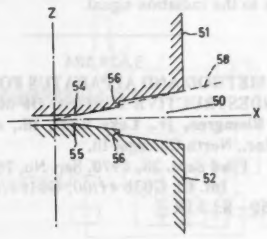
second axis intersecting the central axis, the image intensity of the surface area is the same in the starting position as in the end position of the tilting displacement. Respective individual pictures are taken in these two object positions.

3,629,578

MAGNETIC DEFLECTION SYSTEM FOR ELECTRON ANALYSIS DEVICES

Jan B. Le Poole, Tucson, Ariz., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,039
Int. Cl. H01j *37/26;* **G01n** *23/22*
U.S. Cl. 250—49.5 D **10 Claims**



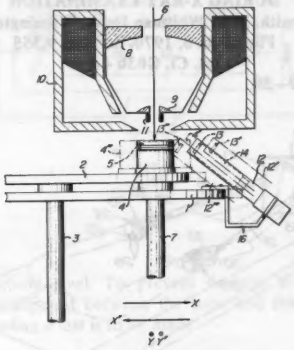
A magnetic deflecting system for deflecting a beam of charged particles comprising a pair of mirror symmetrical pole-pieces on opposite sides of a plane of symmetry passing through a principal ray of the beam. The surfaces of the pole-pieces have contours which define a space between the pole-pieces which varies stepwise in the direction of the main ray with a centrally constricted portion which defines a region of highest field strength. The deflection system has a field strength at which the main ray entering the deflection system, which ray extends at least partly in the direction of the constricted space between the pole-pieces, follows a curve which passes in front of the pole-pieces in the region of the highest magnetic field strength. Means are provided to produce a field strength distribution at the area of the minimum distance of the curve from the region of the highest field strength which, measured in the direction towards the highest field strength, exhibits at that area a locally stronger field strength gradient. This field strength distribution affects the beam so that a curvature of image lines transverse to the plane of symmetry in a plane transverse to the main ray is counteracted, i.e., electron-optical aberrations are reduced.

3,629,579

ELECTRON PROBE SPECIMEN STAGE WITH A SCATTERED ELECTRON DETECTOR MOUNTED THEREON

Hideo Naitou, Mito-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 16, 1970, Ser. No. 3,374
Int. Cl. H01j *37/20*
U.S. Cl. 250—49.5 B **14 Claims**



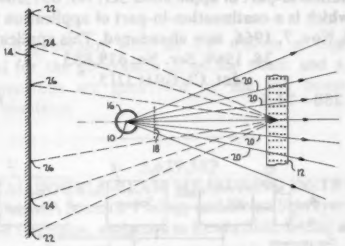
A scattered electron detection device for detecting secondary electrons and reflected electrons, characterized in that a scintillator element of the detection device is moved by means of a transferring mechanism which is movable in association with movements of a specimen stage finely movable in two directions in a horizontal plane, in such a manner that the transferring mechanism is moved following movements of the specimen stage in one of the directions but is held against movements of the specimen stage in the other direction orthogonal to said one direction.

3,629,580

METHOD AND APPARATUS FOR OBTAINING HIGH-RESOLUTION X-RAY INTERFERENCE PATTERNS

Colin S. Willett, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army

Filed July 13, 1970, Ser. No. 54,272
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **10 Claims**



A high-resolution X-ray interferometer. The invention utilizes nonlocalized conical interference fringes which are formed when X-rays from a point source fall on a three-dimensional, planar crystalline array. Each atom within the crystal scatters radiation which then appears to originate from a set of virtual sources S_1, S_2, S_3, ..., S_n located on a line perpendicular to the scattering planes of the crystal. At any point P' behind the point source (for a reflection arrangement) X-rays are received from S_1, S_2, S_3, ..., S_n and interfere to form fringes, analogous to the familiar conical fringes in

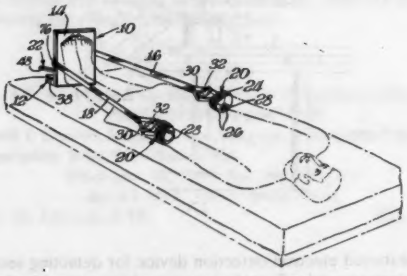
optics. If and only if the crystal or film of crystallites is thin and less than a certain thickness will interference fringes be formed at P'. Since the fringes are nonlocalized, no optics are required to produce any focusing. The structure of the fringes reveals the structure, not of the crystal, but of the X-ray spectra. By having large crystal-to-detector distances extremely large dispersions can be realized.

3,629,581

DEVICE FOR POSITIONING A PATIENT'S SHOULDERS DURING X-RAY EXAMINATION

Jeffrey P. Smith, 2608 Whitman Drive, Wilmington, Del.

Filed Feb. 6, 1970, Ser. No. 9,355
Int. Cl. G03b 41/16
U.S. Cl. 250—50 5 Claims



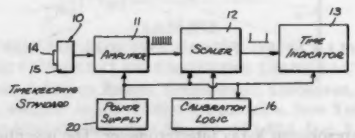
Device for positioning shoulders of prone patient away from neck area to facilitate unobstructed X-ray examination of cervical spine comprises support with vertically disposed foot rest. Flexible elongate members are connected to support, and releasable attaching structure is provided at free end of each flexible elongate member for releasably attaching members to wrists of patient. Winding mechanism on support is connected to flexible elongate members for pulling free ends of members toward footrest. Releasable locking assembly associated with winding mechanism prevents withdrawal of flexible elongate members from support when locking assembly is engaged.

3,629,582

TIMEPIECE WITH RADIOACTIVE TIMEKEEPING STANDARD

Dale R. Koehler, 601 Dale Court, River Vale, N.J., and John T. Grissom, 721 Kephard Cir., Concord, Tenn.

Continuation-in-part of application Ser. No. 651,864, July 7, 1967, which is a continuation-in-part of application Ser. No. 592,582, Nov. 7, 1966, now abandoned. This application Apr. 24, 1969, Ser. No. 819,083
Int. Cl. G01t 1/15
U.S. Cl. 250—71.5 16 Claims



A timepiece wherein the frequency standard takes the form of a radioactive source having a prolonged half-life, the alpha particulate emanations from the source being converted into electrical pulses, the pulses then being scaled down to produce low-frequency control pulses at a constant rate, which operate a time indicator.

3,629,583

TRACK POSITION INDICATING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed June 5, 1968, Ser. No. 734,708
Claims priority, application Austria, June 12, 1967, A 5463/67
Int. Cl. G01t 1/16, 1/18
U.S. Cl. 250—83 14 Claims

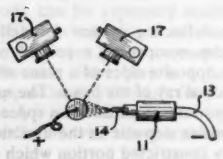
In a mobile track liner wherein the track position is indicated by the relative position of a reference line to an indicating element associated and cooperating therewith, a radiation signal is generated which corresponds to this relative position, and the signal is transmitted to a signal-receiving device by a device arranged transversely of the track and responsive to the radiation signal.

3,629,584

METHOD AND APPARATUS FOR THE NONDESTRUCTIVE TESTING OF MATERIALS

Oscar C. Blomgren, Jr., Lake Bluff, Ill., assignor to Inter-Probe, Inc., North Chicago, Ill.

Filed Sept. 28, 1970, Ser. No. 76,013
Int. Cl. G03b 41/00; G01t 1/16
U.S. Cl. 250—83.3 IR 17 Claims



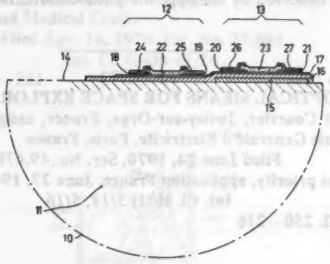
A method and apparatus to determine the integrity of a wide range of materials, including electrically conductive and dielectric materials, wherein the material to be tested is first heated uniformly either naturally in the process of fabricating the material or otherwise to a temperature sufficient for it to give off detectable infrared and/or visible radiation. The material is next subjected to an electrostatic field which cools the material. During the cooling process, the material is monitored with a radiation detector which indicates by a differential in cooling rate the presence of any internal or surface defects.

3,629,585

IMMERSED BOLOMETER USING THIN FILM THERMISTORS

Francois Desvignes, Bourg-La-Reine; Paul Guiochon, and Jean Pompei, both of Evreux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,027
Claims priority, application France, Dec. 31, 1969, 182969
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 R 4 Claims



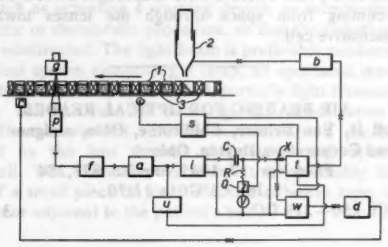
Differential, immersed, thermistor bolometer formed by a planoconvex, transparent lens-support and two thermistors, one active and one compensation element, both deposited on the flat face of said lens.

3,629,586

APPARATUS FOR MEASURING THE MASSES OF A SERIES OF ARTICLES SPACED APART BY MODULES HAVING A SUBSTANTIALLY CONSTANT RADIATION ABSORPTION CHARACTERISTIC

Alan Frederick Giles, Wembley, Middlesex, England, assignor to Lever Brothers Company, New York, N.Y.

Filed May 5, 1969, Ser. No. 821,601
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 8 Claims



A method and apparatus in which the masses of a series of spaced articles are scanned by radiation, e.g., Gamma radiation, and a detector produces an output dependent on the masses of the articles, the output being continuously calibrated by reference to the average value of the measured masses of spacing modules between the articles.

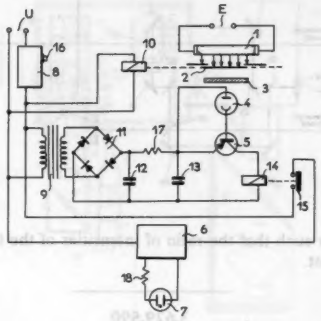
3,629,587

DEVICE FOR MEASURING THE GERMICIDAL ACTION OF ULTRAVIOLET RADIATION

Jean A. Decupper, Neuilly, France, assignor to Detec S.A., Geneva, Place Cornavin, Switzerland

Filed Aug. 4, 1969, Ser. No. 847,366
Claims priority, application Switzerland, France, Aug. 5, 1968, June 4, 1969, 11783/68, 6918367
Int. Cl. G01j *1/22*
U.S. Cl. 250—83.3 UV 7 Claims

In a device for testing the germicidal action of an ultraviolet ray tube, a photoelectric cell receives from the tube only radiation centered on the 2,537 A. line and its output is amplified to actuate an optical or acoustic signal which indicates when the energy of the radiation is below a predetermined threshold level. To prevent damage to the cell, a shutter is interposed between the tube and the cell and is withdrawn when a test is to be made.

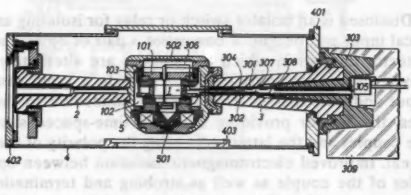


3,629,588

NEUTRON GENERATOR

Werner Eyrich, Karlsruhe Waldstadt, Germany, assignor to Gesellschaft Fuer Kernforschung mbH, Karlsruhe, Weberstr, Germany

Filed Dec. 12, 1969, Ser. No. 884,506
Claims priority, application Germany, Dec. 21, 1968, P 18 16 459.5
Int. Cl. G21g *3/04*
U.S. Cl. 250—84.5 14 Claims



Neutron generator with an ion source at high voltage potential for the generation of an ion beam and a target in which neutrons are generated by the ion beam through nuclear reactions.

3,629,589

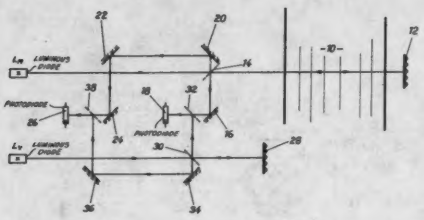
OPTICAL DOUBLE-BEAM MEASURING INSTRUMENT

Franz Gleixner, Munich Pasing, and Heinz Schreyer, Munich, both of Germany, assignors to Erwin Sick, Icking am Isartal, Stifterweg, Germany

Filed Mar. 23, 1970, Ser. No. 21,816
Claims priority, application Germany, Mar. 22, 1969, P 19 14 655.5
Int. Cl. G01j *1/32*
U.S. Cl. 250—205 11 Claims

Before traversing the area in which conditions are to be measured, a portion of a modulated luminous measuring beam is branched off and directed to a photoelectric detector. A portion of a modulated luminous comparison beam also is branched off and sent to the detector. The strengths of

the beams received by the detector are compared and used to control the intensity of one or both of the beam sources in



a manner such that the ratio of intensities of the two sources is constant.

3,629,590

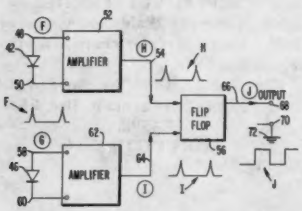
PHOTOELECTRIC RELAY USING OPTICAL COUPLES

Alfred L. Case, College Park, Md., assignor to Versitron, Inc., Washington, D.C.

Continuation-in-part of application Ser. No. 428,347, Jan. 27, 1965, now Patent No. 3,462,606. This application Jan. 21, 1969, Ser. No. 792,597

Int. Cl. H01j *39/12*

U.S. Cl. 250—208 17 Claims



Disclosed is an isolator switch or relay for isolating an electrical input and output. It comprises a pair of optical source-detector couples in which the sources are alternately over-driven over a low duty cycle to provide a rapid response. Input and output logic elements are connected to the couples, the former providing alternate time-spaced signals to the couples and the latter recovering the polarity of the input signal. Improved electromagnetic isolation between opposite sides of the couple as well as strobing and termination circuits are provided. The switch is adapted for use in all types of digital data communication circuits.

3,629,591

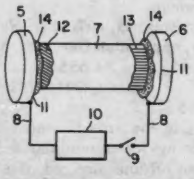
PROTECTIVE LIGHT IMAGE TRANSLATING SYSTEM

William McNeill, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 14, 1969, Ser. No. 799,292

Int. Cl. H01l *15/00*

U.S. Cl. 250—213 R 10 Claims



A light image translating system comprising a plurality of metallic rods insulated one from the other. Each rod, at opposite ends, is provided with an electroluminescent film and a photoconductive film or layer. The rods are mounted with like ends together in tight parallel relation between and abutting with two spaced transparent electrodal elements which are connected with a voltage supply source to cause the electroluminescent film to start to glow when the illumination on the photoconductor layer is at a minimum, and to increase with increasing illumination. The ends of the metallic rods carrying the electroluminescent films thus provide an amplified reproduction of whatever illuminated picture is observed by the opposite photoconductive ends of the rods.

3,629,592

OPTICAL MEANS FOR SPACE EXPLORATION

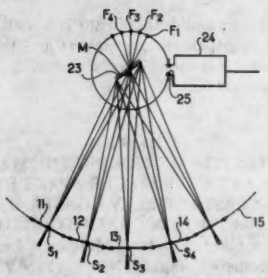
Gilbert Courrier, Juvisy-sur-Orge, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed June 24, 1970, Ser. No. 49,478

Claims priority, application France, June 27, 1969, 6921831

Int. Cl. H01j *3/14, 5/16*

U.S. Cl. 250—216 10 Claims



A device enabling the scanning of a space through a wide field, comprising several lenses whose optical axes are concurrent at a point where a field diaphragm directs the light rays coming from space through the lenses towards a photosensitive cell.

3,629,593

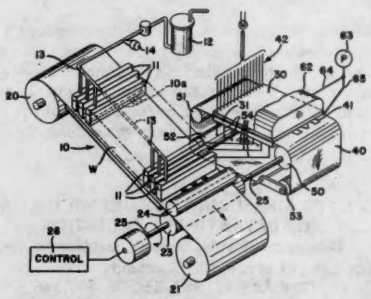
AIR BEARING FOR OPTICAL READER

Russell H. Van Brimer, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 17, 1969, Ser. No. 877,254

Int. Cl. G01n *21/30*

U.S. Cl. 250—219 DC 3 Claims



In an optical reader for a noncontacting printing system in which a film transparency is conveyed between a pair of plates, one of which has a series of photosensitive devices mounted therein and the other a series of light-projecting

means mounted therein, openings are formed in each plate and a fluid, such as air, is pumped through the openings to form an air cushion and prevent the film from touching either of the plates as it passes therebetween.

3,629,594

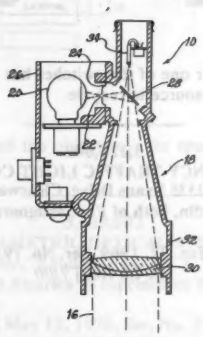
PATIENT-POSITION-MONITORING METHOD AND SYSTEM FOR USE DURING MEDICAL DIAGNOSTIC AND THERAPEUTIC PROCEDURES

Glen Sandberg, Chicago, Ill., assignor to Michael Reese Hospital and Medical Center

Filed Apr. 16, 1970, Ser. No. 29,041

Int. Cl. G03b *41/16*

U.S. Cl. 250—221 **21 Claims**



A light beam is directed upon a retroreflective element, located adjacent the pertinent portion of the patient's body and is reflected upon a photocell or some other photoresponsive means. If there is any appreciable change in the patient's position, the signal from the photocell will change. The changed signal can be employed to perform a control function, such as actuating a warning device, or terminating the diagnostic or therapeutic procedure, so that the radiation will not be misdirected. The light beam is preferably produced by an optical system comprising a lamp, an apertured member to produce a small spot of light, a partially light-transmitting mirror, and a lens for focusing the beam upon the retroreflective element. The reflected beam is preferably focused by the lens through the mirror and upon the photocell. The retroreflective element is preferably in the form of a small piece of retroreflective adhesive tape, to be stuck to or adjacent to the patient's body.

3,629,595

TRANSPARENT CONTAINER INSPECTION APPARATUS

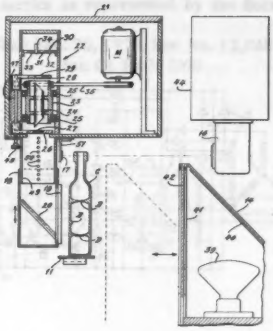
Momir Babunovic, Des Peres, and Virgil Melvin Stapf, Bridgeton, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Mar. 11, 1970, Ser. No. 18,652

Int. Cl. B07c *5/342*

U.S. Cl. 250—223 B **12 Claims**

Apparatus which will inspect containers for defects such as spikes, birdswings, and undesired flaws in the walls which render containers commercially objectionable. The apparatus operates to move containers in series and spaced relation through an inspection station where a background lighting is established to illuminate an area of each container larger than the field to be inspected. Opposite the source of light is an image-forming surface or mirror which directs the illuminated container image to an inspection unit which rotates the image to evaluate the overall evenness or uniform background lighting effect and photocells react to dark spots or areas usually caused by spikes, birdswings and flaws which upset the uniformity of the light in the area of the container being inspected. When a dark spot of the smallest detectable size, or a foreign body capable of changing or effecting the illumination is detected by the photocells, the container in which the change or effect occurs is rejected.



3,629,596

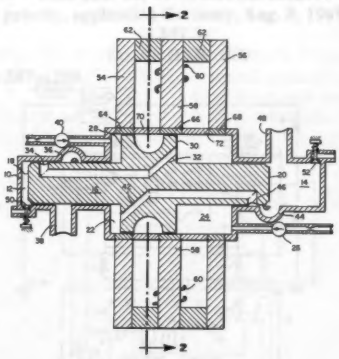
FREE PISTON GENERATOR

James Milner Wills, Gulfport, Miss., assignor to General Electric Company

Filed Dec. 29, 1970, Ser. No. 102,406

Int. Cl. H02p *9/04*

U.S. Cl. 290—1 **3 Claims**



The structure of a free piston engine is integrated with a magnetic circuit. The magnetic circuit has alternate magnetic flux paths with common central legs having generating coils thereon. A portion of the reciprocating piston completes first one flux path and then the other. Permanent magnets are included in the circuit arranged so that the direction of magnetic flux in the central leg reverses as the piston reciprocates, thereby generating an alternating current.

3,629,597

ENGINE-STARTING SYSTEMS

David Wiley, 4A Tong Street, Walsall, Staffordshire, and Maurice James Allport, 70 Stevens Road, Stourbridge, Worcester, both of England

Filed Apr. 14, 1970, Ser. No. 28,314

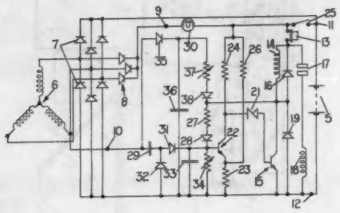
Claims priority, application Great Britain, May 12, 1969, 24,054/69

Int. Cl. F02n *11/00*

U.S. Cl. 290—37 **2 Claims**

In an engine-starting system there is a starter circuit for starting the engine in the usual way, but in the starting circuit

is provided means for breaking the transistor circuit when the engine speed is above a predetermined value. Conveniently this means is a transistor in series with a relay controlling the starter, and this transistor is turned off when the engine



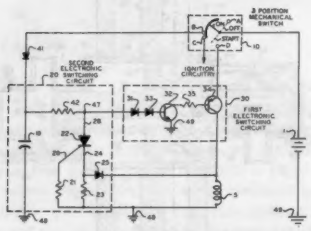
speed is above a predetermined value. However, delay means is provided for keeping the starter circuit broken for a predetermined period of time after the engine speed falls below the predetermined value.

3,629,598

ELECTRIC STARTING MOTOR LOCK-OUT SYSTEM

Todd L. Rachel, Elmira, N.Y., assignor to The Bendix Corporation

Filed Sept. 14, 1970, Ser. No. 71,714
Int. Cl. F02n *11/14*
U.S. Cl. 290—38 R **10 Claims**



An electrical starting system for an internal combustion engine that includes solid-state control devices that are responsive to the voltage produced by the collapsing field of a starter solenoid when the starter is deenergized to prevent the reenergization of the starter solenoid until a manually operated ignition switch is moved to the off position for a predetermined time.

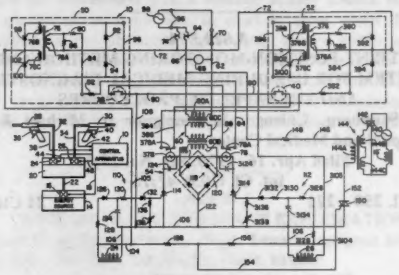
3,629,599

CONTROL APPARATUS

Harold J. Zuckerman, East Paterson, N.J., assignor to Zyrotron Industries, Inc., South Hackensack, N.J.

Filed Apr. 10, 1970, Ser. No. 27,337
Int. Cl. F15c *21/10*
U.S. Cl. 307—38 **12 Claims**

Apparatus for controlling the selective and individual operation of at least a first and a second tool operable from a single energy source of the cyclical type comprising a first switch which is operable to connect the first tool to the energy source and a second switch which is operable to connect the second tool to the energy source. Disabling means responsive to the operation of the first or second switch is operable to disable the other switch for a predetermined in-



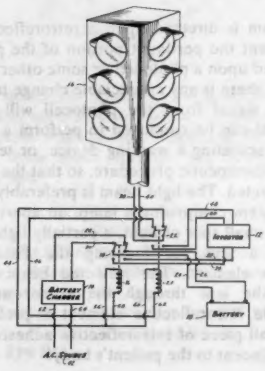
terval of time after one of the switches has been operated to permit the energy source to recycle.

3,629,600

EMERGENCY TRAFFIC LIGHT CONTROL

C. Robert Stuler, 2335 Evans Drive, Clearwater, and Theodore H. Smith, Dunedin, both of Fla., assignors to said Stuler by said Smith

Filed Jan. 22, 1969, Ser. No. 793,010
Int. Cl. H02j *7/00*
U.S. Cl. 307—66 **2 Claims**



Automatic changeover apparatus for operating a traffic light under DC power through an inverter upon a failure of a primary power source. A battery charger is incorporated into the apparatus to maintain the battery providing the DC power at peak voltage.

3,629,601

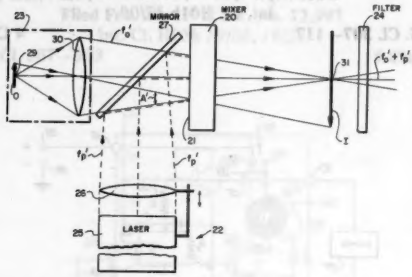
HIGH-RESOLUTION OPTICAL UPCONVERTER

Arthur H. Firester, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed May 15, 1970, Ser. No. 37,646
Int. Cl. H03f *7/00*
U.S. Cl. 307—88.3 **10 Claims**

An optical upconverter having a pump source, an object source, a nonlinear optical material, and a filter for passing the sum of the pump and object frequencies. A dichroic mirror or beam splitter and the pump are arranged such that the pump source appears to the entrance face of the nonlinear material to be a point source located at the object plane. The

phase matching acceptance angle of the nonlinear optical material is greater than the maximum angle formed between



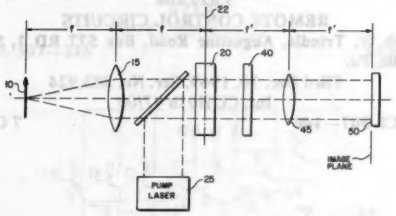
the pump rays and the object rays for spaced points on the object.

3,629,602

PARAMETRIC OPTICAL SYSTEM

Arthur H. Firester, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed May 15, 1970, Ser. No. 37,648
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 10 Claims



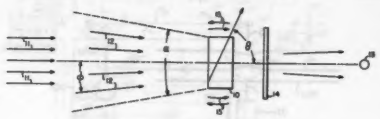
A parametric optical system in which an object beam of a first frequency is combined within an optically nonlinear medium with a substantially planar optical pump beam of a second frequency to provide either an upconverted image at the sum (or difference) frequency or an amplified version of the object beam, depending upon the design of the nonlinear medium, characterized in that a first lens of a given focal length is positioned between the object and the nonlinear medium and spaced from each by a distance equal to said focal length; this lens serves as a Fourier transform mechanism wherein the Fourier transform plane of the object is located substantially in the center of the nonlinear medium; that is, an image that is the Fourier transform of the object is formed in the back focal plane of the lens at which focal plane the nonlinear medium is situated. Furthermore, a similar Fourier transform technique is used between the nonlinear medium and the observer or detecting device; that is, a second lens is positioned a focal length distant from both the nonlinear medium and the detecting device for generating the Fourier transform of the upconverted (or amplified) image of the medium. In this manner, the optical resolution is unlimited by the thickness of the nonlinear medium.

3,629,603

MEANS AND METHOD FOR OPTICAL PARAMETRIC UP CONVERSION OF IR IMAGES

Ronald A. Andrews, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 20, 1970, Ser. No. 12,948
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 7 Claims



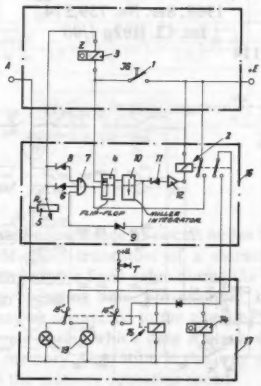
This invention provides a means and method of increasing the annular tolerance on the propagation of infrared radiation through a nonlinear crystal for phase-matched up conversion of infrared images to the visible light.

3,629,604

PULSE-CONDUCTING CIRCUIT ARRANGED TO DETECT TROUBLES IN ITS OPERATION

Anton Halder, Muhlhausen Schwenningen, and Erwin Buhl, Frittlingen, both of Germany, assignors to J. Hengstler K.G. Aldingen Kreis, Tuttlingen, Germany

Filed June 26, 1970, Ser. No. 50,141
Claims priority, application Germany, Aug. 8, 1969, P 19 40 337.3
Int. Cl. H03k 3/00
U.S. Cl. 307—106 12 Claims

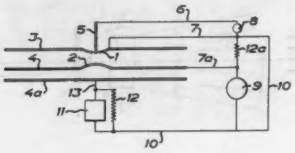


A pulse source is operable to deliver pulses having a current value within a predetermined range and a predetermined duration. A detecting circuit is connected to said pulse source and arranged to detect a condition in which one of said pulses has a current value outside said range or a duration which is shorter than said predetermined duration. The detecting circuit comprises means for adjusting said range and a relay, which is connected to a voltage source and arranged to give a predetermined response when said voltage source applies a predetermined voltage to said relay and said detecting circuit detects said condition.

3,629,605
APPARATUS FOR PROVIDING A STEEP VOLTAGE STEP ACROSS A LOAD IN ELECTRIC HIGH-VOLTAGE CIRCUIT

Nils Robert Nilsson, Uppsala, Sweden, assignor to Instrument AB Scanditronix, Taby, Sweden

Filed June 20, 1969, Ser. No. 835,112
Claims priority, application Sweden, June 24, 1968, 8507/68
Int. Cl. H03k 3/00
U.S. Cl. 307—106 4 Claims

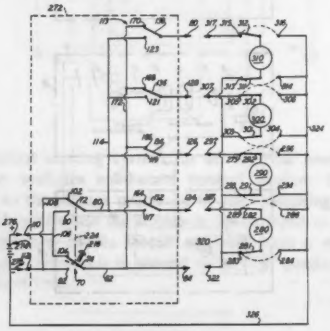


An apparatus for providing a steep voltage step across a load has two sets of electric conductors with electrodes forming spark gaps, said sets of conductors being connected to be charged in parallel by high-voltage source and discharged in series by spark gaps in order to impress a multiple of the tension of said high-voltage source upon the load and said sets of conductors being shaped and arranged to form around such of said spark gaps a transmission conducting zone in which the impedance continuously varies in a direction away from the spark gap and is at its minimum at the outer boundary of the zone in order to make the voltage step steep by impedance transformer action for the high frequencies generated at breakthrough in the spark gap.

3,629,606
MASTER AND REMOTE SWITCH CIRCUIT

Charles J. Mathey, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Original application Sept. 30, 1966, Ser. No. 583,249, now Patent No. 3,400,232. Divided and this application Mar. 27, 1968, Ser. No. 739,574
Int. Cl. H02p 1/00
U.S. Cl. 307—114 3 Claims

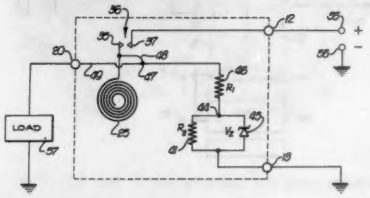


This control circuit applies an electrical potential to either side of an electric motor upon actuation of one of several separately located switch assemblies. One switch assembly comprises two single-pole, double-throw switches having the poles connected to opposite sides of the motor. Each pole is individually movable to first and second terminals, and one side of a battery is connected to each first terminal. A second switch assembly is located in the circuitry connecting the other side of the battery to the second terminals and includes a switch mechanism for reversing the battery polarity at either of the second terminals individually.

3,629,607
THERMOSTAT WITH HEAT ANTICIPATION AND VOLTAGE REGULATION

Gregory A. Maddox, Los Angeles, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Sept. 4, 1970, Ser. No. 69,818
Int. Cl. H01h 37/00
U.S. Cl. 307—117 4 Claims

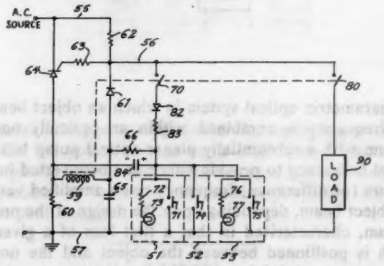


A thermostat for controlling a room heating system or the like and operable from a widely varying electric power source, such as the battery of a mobile home or trailer or camper. A thermostat with a thermally responsive bimetal member operating a switch as a function of temperature, a heating resistor positioned adjacent the bimetal member for heat anticipation, and a voltage regulating Zener diode in circuit with a current dropping resistor and the heating resistor to provide constant heating current and thereby constant anticipation while the voltage of the power source fluctuates over a wide range.

3,629,608
REMOTE CONTROL CIRCUITS

Joseph W. Trindle, Augustine Road, Box 577 RD 1, Sellersville, Pa.

Filed Dec. 10, 1969, Ser. No. 883,924
Int. Cl. H01h 47/00
U.S. Cl. 307—140 7 Claims



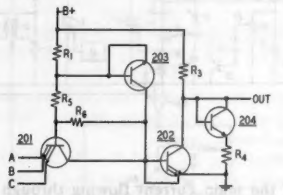
A remote control circuit for controlling the application of power to a load by latching and unlatching a relay. The relay is controlled by a capacitor which is coupled to the relay by means of a plurality of switches which may be placed at different locations. The condition of the capacitor and its location in the circuit are selected such that current through the relay is alternately increased and decreased sufficiently to cause latching and unlatching in response to successive momentary closings of any of the switches.

3,629,609

TTL INPUT ARRAY WITH BYPASS DIODE

Richard Alan Pedersen, Allentown, Pa.; Ray Allen Reed, Aurora, and Milton Dean Underwood, Geneva, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 20, 1970, Ser. No. 12,997
Int. Cl. H03k *19/08, 19/36*
U.S. Cl. 307—203 5 Claims



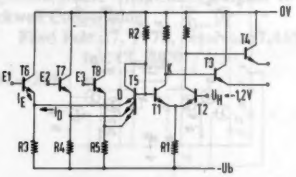
A transistor-transistor logic gate characterized by a low inverse alpha current and high noise margins includes a multiemitter input array and a unique biasing arrangement. This arrangement comprises a diode-connected transistor in combination with a pair of resistors connected across the base-collector junction of the multiemitter transistor for maintaining an optimum biasing voltage across the base-collector junction of the multiemitter transistor regardless of the value of signals applied at the emitters thereof.

3,629,610

ECL LOGIC CIRCUIT

Wilhelm Wilhelm, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 9, 1970, Ser. No. 17,731
Claims priority, application Germany, Apr. 14, 1969, P 19 18 873.9
Int. Cl. H03k *19/22*
U.S. Cl. 307—218 3 Claims



An emitter-coupled logic circuit for realization of an AND linkage in positive logic, utilizing a differential amplifier in the form of emitter-coupled transistors, in which a polyemitter transistor forms the control input for the differential amplifier and has the emitter electrodes thereof connected over respective emitter-follower stages to the respective input signal sources.

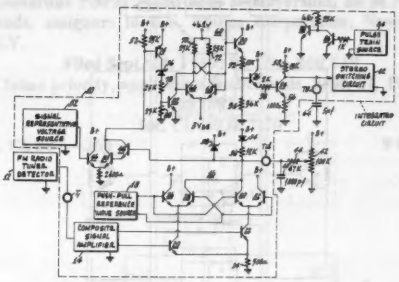
3,629,611

ELECTRONIC PROCESSING APPARATUS

Allen Leroy Limberg, Somerville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 29, 1969, Ser. No. 888,365
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 14 Claims

Average detection apparatus employing pulse-stretching techniques for increasing the energy content and compressing the dynamic pulse width range of a pulse train including randomly occurring, short duration, widely spaced pulses. The pulse train and a train of reference pulses are supplied to a bistable storage element to set and reset the element, respectively, to first and second output states. An



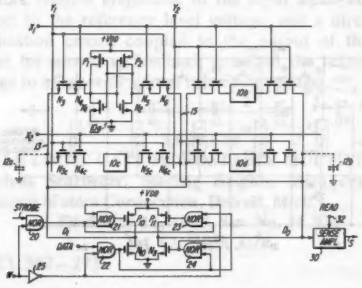
average detector is coupled to the output of the storage element.

3,629,612

OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUIT HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE

Donald Duane Harbert, Prosperity, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,342
Int. Cl. G11c *11/34*
U.S. Cl. 307—238 11 Claims



The distributed capacitance at circuit nodes between interconnected field-effect transistors of a memory decoder is maintained charged to a fixed value during the major portion of the memory operating time. For example, the distributed capacitance may be connected to the charging source except for brief intervals during which data is being written into or read from the memory. Operation in this way makes it possible to increase the memory operating speed.

3,629,613

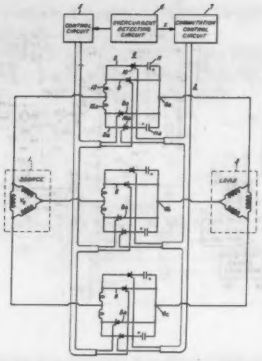
COMMUTATION DIRECTION CIRCUIT

Edgar P. Feige, Chester, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 1, 1970, Ser. No. 77,298
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 Q 5 Claims

Disclosed is means for insuring proper commutation in an inverse parallel connected power thyristor switch. The switch includes selectively operable commutation means for interrupting a fault current in rapid response to a stop signal from an overcurrent detector, polarity detecting means which determine direction of current flow through the switch and

control means operative in response to the polarity detector means which enables the stop signal to actuate the commutation means associated with the fault current conducting thyristor. Further, means are provided to ensure that the stop signal once given quickly terminates.

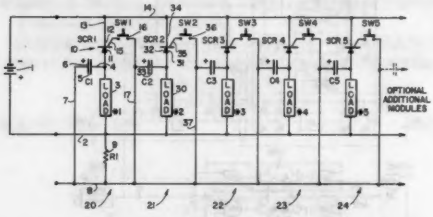


3,629,614

PARALLEL CONNECTED CONTROLLED RECTIFIER SWITCHING CIRCUIT

Raymond W. Matthews, Jr., 28 Bernard Lane, Commack, N.Y.

Filed Jan. 22, 1969, Ser. No. 793,020
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 **3 Claims**



A switching system is constructed using a plurality of modules. Each module controls the power to a separate load and includes a capacitor, a silicon controlled rectifier, and a switch. In each module the gate of each of the controlled rectifiers is connected, through a switch, to a common lead line which line is also connected to one side of the capacitor.

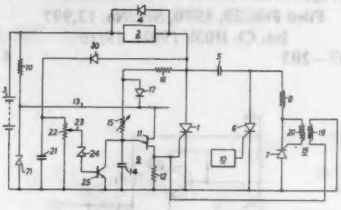
3,629,615

CURRENT-LIMITING MEANS FOR DC PULSE-CONTROLLED CIRCUITS

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited

Filed June 11, 1968, Ser. No. 736,136
Claims priority, application Great Britain, June 14, 1967, 27,413/67
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 M **11 Claims**

A static switching controller for repetitively connecting to, and disconnecting from, a load of a DC source, the circuit of the load of the source possessing inductance, comprises thyristor means, energizable to connect the load of the source, and a commutating capacitor for switching off the thyristor means, wherein there are provided sensing means which senses a voltage dependent upon the current passing through the thyristor means on commutation thereof and circuit elements which, when said voltage sensed by the sensing means exceeds a predetermined value, are operative to effect limitation of the main current flowing through the load by reducing the ratio of conducting to nonconducting time of the thyristor means.

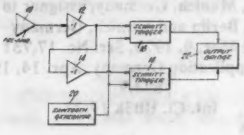


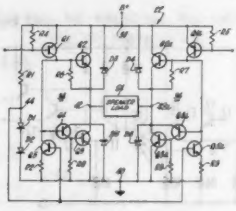
3,629,616

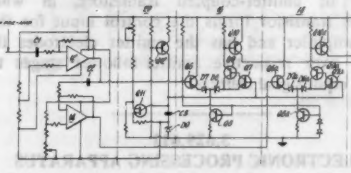
HIGH-EFFICIENCY MODULATION CIRCUIT FOR SWITCHING-MODE AUDIO AMPLIFIER

Neil Edward Walker, Tampa, Fla., assignor to Electronic Communications, Inc., St. Petersburg, Fla.

Filed July 1, 1969, Ser. No. 838,176
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **5 Claims**







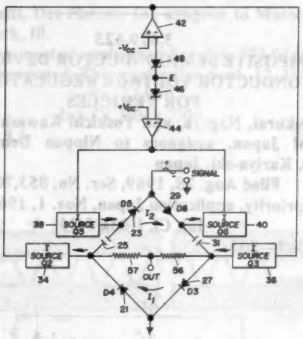
A circuit for efficiently coupling an amplified audio signal to a transducer is disclosed. In the form herein described, two 180° out-of-phase audio signals are respectively applied to first and second comparators which compare the audio signals with a reference signal to produce two pulse-width-modulated signals. The latter signals are applied to switching semiconductors connected in the two arms of a bridge which includes the transducer.

3,629,617

VOLTAGE-CONTROLLED LOGARITHMIC ATTENUATOR

Gerald F. McGowan, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,264
Int. Cl. H03k 17/74
U.S. Cl. 307—257 5 Claims



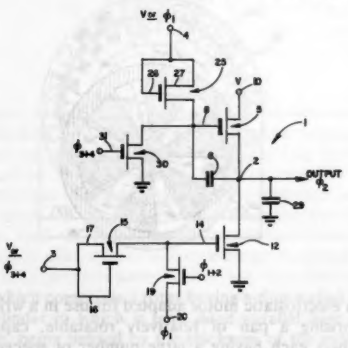
A voltage-controlled attenuation circuit providing an approximate linear relationship between a control voltage and the logarithm of the circuit attenuation ratio. The circuit includes parallel diode voltage dividers connected in parallel with a signal source and a source of control voltage which drives two pairs of current bias sources. The signal current adds to and subtracts from the bias current in each of the voltage dividers to yield a logarithmic voltage output across the summing resistors forming an output circuit across the pair of voltage dividers.

3,629,618

FIELD EFFECT TRANSISTOR SINGLE-PHASE CLOCK SIGNAL GENERATOR

Ted Y. Fujimoto, Santa Ana, Calif., assignor to North American Rockwell Corporation

Filed Feb. 27, 1970, Ser. No. 67,459
Int. Cl. H03k 17/60
U.S. Cl. 307—269 5 Claims



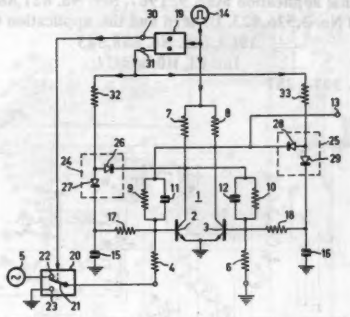
An output driver field effect transistor using a feedback capacitor for boosting the voltage on its gate electrode is controlled by single-phase and double-phase clock signals for producing a different single-phase clock signal output having the required voltage level. The voltage level at the output can be provided by a clock signal or by a fixed voltage source.

3,629,619

DEVICE INCLUDING A COMPARISON STAGE IN THE FORM OF A BISTABLE TRIGGER

Johannes Anton Greefkes; Karel Riemens, both of Emmasingel, Eindhoven; Geerlof Jan Korevaar, and Van Dijh Leonardus Petrus Jozef, both of Hilversum, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,649
Claims priority, application Netherlands, Sept. 27, 1968, 6813832
Int. Cl. H03k 5/20
U.S. Cl. 307—264 9 Claims



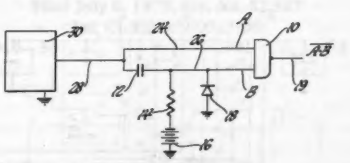
A device for furnishing a stable reference level voltage for an input signal subject to periodic sampling, comprising a bistable trigger, a pulse generator which causes the bistable trigger to conduct in one of its balanced states in accordance with the relative magnitude of the input signal source with respect to the reference level voltage, and a direct voltage stabilization circuit coupled to the output of the bistable trigger for providing feedback to adjust the reference level voltage to agree with a fixed reference voltage.

3,629,620

SINGLE LOGIC GATE MONOSTABLE MULTIVIBRATOR

Thaddeus Schroeder, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 36,324
Int. Cl. H03k 3/26
U.S. Cl. 307—273 3 Claims



A system for providing a series of output pulses from a series of input pulses wherein the pulse widths of the output pulses are equal to or less than the pulse widths of the input pulses. In this system a logic gate forms part of a monostable multivibrator providing an output pulse of a predetermined pulse width when constant-amplitude input pulses of indeterminate pulse widths exceeding the predetermined pulse width of the output pulses are supplied from a pulse source. When shorter pulse width input pulses are applied to the multivibrator, the output pulses have pulse widths equal to the pulse widths of the input pulses. To effect the desired operation, an RC timing circuit is connected with one input of a two-input gate element. The pulse source is connected to this gate input through the timing circuit and it is directly conductive-

ly coupled with the other input to the logic gate. In this manner, the input signals necessary for the creation of an output pulse are present for a time interval determined by the parameters of the timing circuit or the duration of the input pulse. Hence, output pulses are provided which have a pulse width equal to or less than the pulse widths of the input pulses.

3,629,621

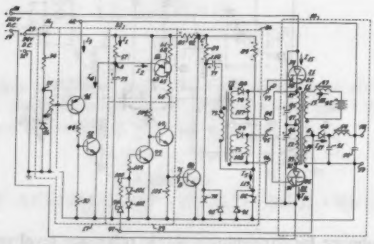
BISTABLE MULTIVIBRATOR EMPLOYING A PAIR OF FOUR-LAYER DIODES

Luther L. Genuit, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc.

Original application Mar. 9, 1967, Ser. No. 621,884, now Patent No. 3,526,823. Divided and this application Oct. 22, 1969, Ser. No. 868,563

Int. Cl. H03k *3/31*

U.S. Cl. 307—287 **3 Claims**



A bistable multivibrator employs a single transistor, a capacitor, a pair of four-layer diodes and a pair of transistors. Trigger pulses applied to the base of the transistor caused the multivibrator to be switched each time a positive pulse is applied.

3,629,622

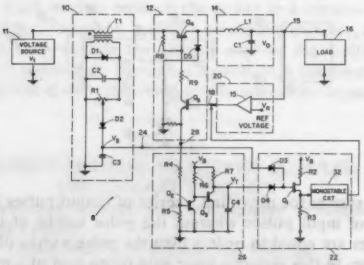
SWITCHING REGULATOR HAVING A LOW DISSIPATION CURRENT OVERLOAD DETECTION DEVICE

David Denenberg, Jr., Mendon, Mass., assignor to Sylvania Electric Products Inc.

Filed Apr. 3, 1970, Ser. No. 25,411

Int. Cl. G05f *1/40*

U.S. Cl. 307—297 **2 Claims**



A switching regulator employs between a primary power source and a switching transistor a sensing circuit which senses the current being drawn through the switching transistor by a load. A storage filter circuit having a large series inductance is connected between the load and the switching transistor. A feedback network is connected between the output connection of the storage filter circuit and the switching transistor to activate the switching transistor when the output voltage falls below a predetermined value and to inactivate the switching transistor when the output voltage exceeds a predetermined reference value. The sensing means which senses gradual overloads and a timing circuit which senses abrupt overloads are coupled to the switching transistor via a threshold circuit which compares the output signals from the sensing means and the timing circuits to a predetermined threshold level. When either of the output signals exceeds the threshold level, the switching transistor is opened interrupting the current from the primary power source.

3,629,623

COMPOSITE SEMICONDUCTOR DEVICE AND SEMICONDUCTOR VOLTAGE REGULATOR DEVICE FOR VEHICLES

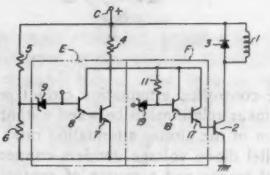
Michio Sakurai, Nagoya, and Yoshichi Kawashima, Gifu-shi, both of Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Filed Aug. 28, 1969, Ser. No. 853,708

Claims priority, application Japan, Nov. 1, 1968, 43/95694

Int. Cl. H03k *3/26*

U.S. Cl. 307—303 **5 Claims**



A composite semiconductor element formed in a thick film comprising a plurality of circuit units and functioning as a multi-input switching circuit or a multi-input logic circuit, each unit being mainly composed of two transistors connected in Darlington connection with a common collector region. This composite semiconductor element is especially useful for voltage regulators for vehicles.

3,629,624

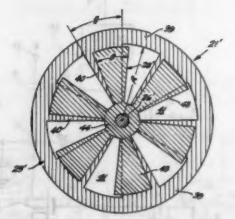
ELECTROSTATIC MOTOR

Juergen H. Staudte, P. O. Box 2866, Fullerton, Calif.

Filed Mar. 23, 1970, Ser. No. 21,598

Int. Cl. H02m *1/00*

U.S. Cl. 310—6 **19 Claims**



An electrostatic motor adapted for use in a wristwatch and comprising a pair of relatively rotatable, capacitor plate members each having a large number of spaced preferably sector-shaped segment which may be fabricated microlithographically. For synchronous operation, a unipolar square wave voltage is applied directly across the capacitor plate members, the resultant electrostatic forces causing rotation of the motor. In alternative embodiments, sets of capacitor plate segments may be driven by signals appropriately phased to insure unidirectional motor rotation, or the segments may be connected so that only one plate member receives a drive

signal. For self-switching operation, the drive voltage is switched on or off in response to changes in effective capacitance as the motor rotates. The inventive device also may be used for extremely accurate measurement of rotational speed.

3,629,625

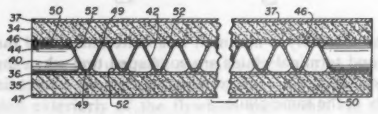
PIEZOELECTRIC BENDER BILAYER WITH FLEXIBLE CORRUGATED CENTER VANE

Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of application Ser. No. 773,914, Nov. 6, 1968, now abandoned. This application Sept. 17, 1970, Ser. No. 72,990

Int. Cl. H01v 7/00

U.S. Cl. 310—8.6 21 Claims



A transducer such as a bender bilayer piezoelectric device, or bimorph, in the form of a flat disc includes a pair of sheets, made for example of ceramic, separated by a center vane. The center vane is corrugated with the apices of the corrugations cemented to the sheets. The center vane has a center portion which acts as a stiff hinge permitting movement of the sheets relative to each other. The outer portion of the center vane includes corrugations at right angles to the corrugations of the center portion to prevent movement of the circumferences of the sheets with respect to each other.

3,629,626

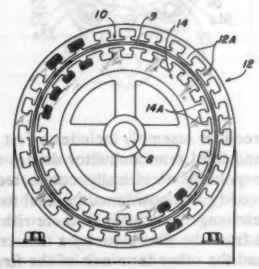
LOW-INERTIA, HIGH-TORQUE MOTORS

Frank R. Abbott, 3953 Wildwood, San Diego, Calif.

Filed Sept. 22, 1969, Ser. No. 859,628

Int. Cl. H02k 37/00

U.S. Cl. 310—49 3 Claims



A motor which comprises a rotor having a thin-walled nonmagnetic cylinder in which is embedded parallel bars. The bars are thin, being limited by the thickness of the cylinder wall, and are wide enough, approximately, to span one stator pole face. Preferably two stator structures are employed, one inside and the other outside the rotor cylinder. One set of windings for raw AC, and another set of windings for pulsed or rectified AC of either polarity, are so distributed in the slots between the pole pieces as to generate a magnetic torque in either direction. The direction the armature steps is controlled by selecting the loop of positive or negative polarity obtained by rectifiers from the AC power source.

3,629,627

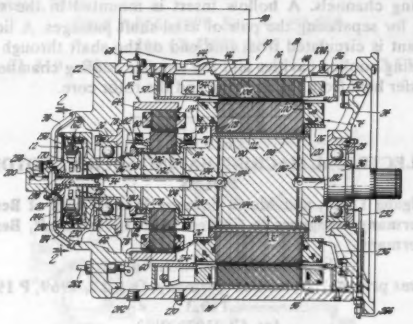
COOLING ARRANGEMENT FOR A DYNAMOELECTRIC MACHINE

Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,556

Int. Cl. H02k 9/00

U.S. Cl. 310—54 3 Claims



A dynamoelectric machine cooling arrangement is disclosed for a brushless alternating current generator including an integral rectifier assembly. Rotating parts mounted on the machine shaft are cooled by annular pools of liquid coolant which are circulated around annular supporting portions of the rotating parts. A rectifier support wheel mounted on the shaft has an annular cooling chamber. Heat sinks for supporting radially oriented semiconductor diodes are mounted within the annular chamber and are cooled by an annular pool of coolant supplied by a coolant flow directed over the semiconductor diodes. Coil end turn supports mounted on the shaft include annular reservoirs for containing annular pools of coolant with a coolant flow being directed thereto form radial passages provided in the shaft.

3,629,628

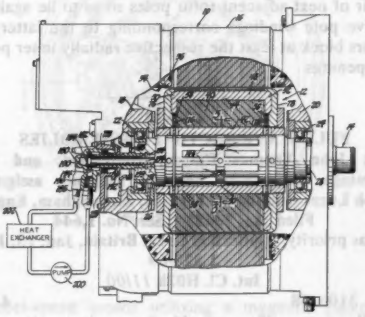
COOLING ARRANGEMENT FOR A SQUIRREL CAGE ROTOR ASSEMBLY

William E. Rank, Dayton, and Gene L. Dafler, New Lebanon, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,557

Int. Cl. H02k 9/00, 3/06

U.S. Cl. 310—54 4 Claims



In a preferred form, a cooling arrangement for a squirrel cage rotor assembly of an alternating current electric drive

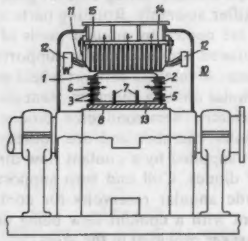
motor includes a pair of rotor end plates clamped to the ends of a rotor core carrying a pair of conductive end rings extending from the ends of the rotor core. The rotor end plates form end ring cooling cavities circumscribing the inner peripheries of the end rings. The rotor core is carried by the motor shaft and a recessed area on the outer diameter of the shaft forms axial cooling channels in heat conducting relation with the inner bore of the rotor core. A pair of concentric axial shaft passages extend through a bore in the center of the shaft and communicate with radial shaft passages connected with the end ring cooling cavities and with the axial cooling channels. A hollow insert is mounted in the shaft bore for separating the pair of axial shaft passages. A liquid coolant is circulated from one end of the shaft through the end ring cooling cavities and the annular cooling chamber to transfer heat from the end ring and the rotor core.

3,629,629

ELECTRICAL MACHINE HAVING SALIENT ROTOR POLES

Wolfgang Liebe, and Maria Susanne Wendt, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 13, 1970, Ser. No. 80,328
Claims priority, application Germany, Oct. 17, 1969, P 19 53 110.3
Int. Cl. H02k *9/02*
U.S. Cl. 310—59 **13 Claims**



An electrical machine has a salient pole rotor with respective pole windings and a stack of rotor laminations disposed radially with respect to the rotor. The machine is coolable by air passing parallel to the rotor axis through interpolar gaps defined by mutually adjacent rotor poles and continuing radially over the stator laminations. The improvement provides for a plurality of deflectors for partially blocking the respective interpolar gaps at the inlet side thereof. Each of the deflectors lies in a radial plane substantially perpendicular to the rotor axis and extends across the interpolar gap defined by a pair of next-adjacent rotor poles so as to lie against the respective pole windings corresponding to the latter; these deflectors block at least the respective radially inner portions of the openings.

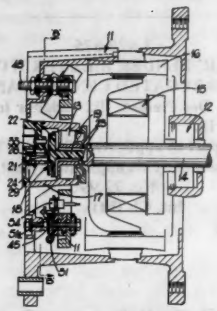
3,629,630

FULL WAVE RECTIFIER ASSEMBLIES

Herbert John Thomas Cotton, Hollywood, and Robert Hemmings, Halesowen, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 9, 1970, Ser. No. 1,644
Claims priority, application Great Britain, Jan. 13, 1969, 1,878/69
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **4 Claims**

A full wave rectifier assembly for use in an alternator includes first and second curved terminal plates. The first terminal plate carries a set of diodes with their cathodes electrically connected to the first plate, and the second terminal plate carries a second set of diodes with their anodes electrically connected to the second plate. The first and second plates are physically interconnected in insulated relationship



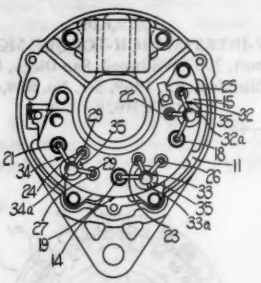
when the assembly is mounted in an alternator, and the first and second terminal plates are so shaped that when the first and second plates are interconnected then the diodes lie substantially in the same plane.

3,629,631

FULL WAVE RECTIFIER ASSEMBLIES

Herbert John Thomas Cotton, "Lea Mount" 195 Alcester Road, Hollywood, Worcestershire, and Robert Hemmings, 49 Masters Lane, Halesowen, Worcestershire, both of England

Filed Apr. 21, 1970, Ser. No. 30,563
Claims priority, application Great Britain, June 9, 1969, 29,033/69
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 D **5 Claims**



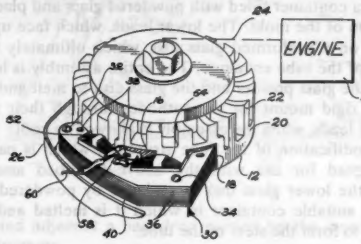
A full wave rectifier assembly includes a first plate carrying first, second, and third semiconductor diodes with their terminals of one polarity electrically connected to the first plate, and a second plate positioned parallel to the first plate and in heat exchange relationship therewith. The second plate is spaced from the first plate by a thin layer of insulating material, and the other terminals of the first, second and third diodes of opposite polarity to the one polarity extend through holes in the second plate. Fourth, fifth and sixth semiconductor diodes are carried by the second plate with their terminals of the opposite polarity electrically connected to the second plate. The assembly further includes first, second, and third phase connectors, the first phase connector being connected to the other terminals of the first and fourth diodes, the second phase connector being connected to the other terminals of the second and fifth diodes and the third phase connector being connected to the other terminals of the third and sixth diodes, so that in use when the phases of a three-phase AC supply are connected to the phase connectors respectively DC will flow in a load connected across the first and second plates.

3,629,632

FLYWHEEL ELECTRICAL GENERATOR

Richard H. Loupe, Seal Beach, Calif., assignor to Altralite, Inc., Long Beach, Calif.

Filed July 30, 1970, Ser. No. 59,503
Int. Cl. H02k 7/02
U.S. Cl. 310—74 5 Claims



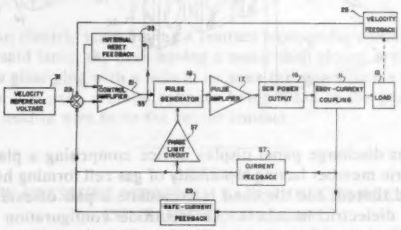
A generator for use with a small rotary engine incorporating permanent magnets in its flywheel, the generator being mounted exteriorly of the flywheel and within the flywheel housing, if any is used. The magnets move relative to a stator having a "double-E" configuration with two poles, each of which carry a pair of windings. The windings on each pole are connected in electrical opposition through diodes to supply the desired electrical current. The stator structure is laminated and has preferred physical dimensions.

3,629,633

CONTROLLED-VELOCITY DRIVE CONTROL

Gerald F. O'Callaghan, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Oct. 26, 1970, Ser. No. 83,826
Int. Cl. H02k 49/04
U.S. Cl. 310—94 20 Claims



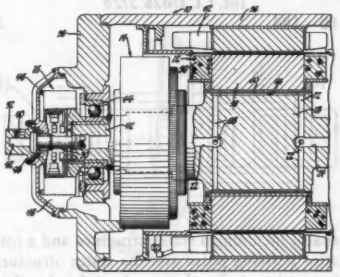
A control for a controlled-velocity drive having a driven member and an electromagnetic coupling having a winding the energization of which controls the angular velocity of the driven member. A triggerable semiconductor current switching device is adapted to be connected between a source of AC power and the winding for controlling the energization thereof. Three feedback circuits provide degenerative feedback signals respectively varying according to the driven member angular velocity, the current in the winding and the rate of change of the current. Means is provided for producing a reference voltage proportional to a preselected angular velocity of the driven member. Circuitry is responsive to the reference voltage and to the three feedback signals for causing triggering of the current switching device at varying phase angles of the AC power to drive the driven member substantially at said preselected angular velocity. This circuitry is also operational for causing triggering of the switching device at a substantially constant phase angle of the AC power to cause conduction of the switching device when the AC power voltage and the voltage across the winding are inverted so that current in the winding decays rapidly when energization thereof is rapidly reduced. Various optional control functions are also provided which may be connected by jumper leads.

3,629,634

CONDUIT ARRANGEMENT FOR A LIQUID-COOLED DYNAMOELECTRIC MACHINE

Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,559
Int. Cl. H02k 9/00
U.S. Cl. 310—54 3 Claims



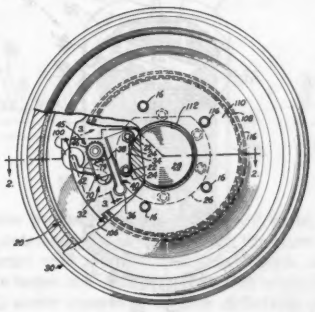
A conduit arrangement is described for conducting a liquid coolant between stationary and rotating parts of a liquid-cooled dynamoelectric machine. One conduit end is rotatably mounted in a self-aligning bearing supported in the stationary part and the other end is mounted for universal movement within the passage opening of the rotating part. The conduit is rotated by a pin extending into the passage of the rotating part.

3,629,635

WHEEL-SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM

Edward M. Pauwels; Irving M. Ritsema, and Ward C. Suttle, all of South Bend, Ind., assignors to The Bendix Corporation

Filed June 1, 1970, Ser. No. 42,402
Int. Cl. H02k 17/42
U.S. Cl. 310—168 7 Claims



A wheel-speed sensor utilizing a magnetic pickup and adapted for use on an automotive vehicle. A cup-shaped drive wheel has an elastomeric friction ring secured to the inside surface of the rim of the cup. The friction ring drives a driven wheel and tone wheel element of an assembly includ-

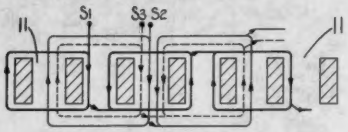
ing a pickup whose components are assembled on a unitary plastic molding which also serves as the bobbin for the coil. The mounting element of the driven wheel and pickup is a unitary stamping attached to a nonrotatable portion of the vehicle.

3,629,636

ALTERNATORS UTILIZING TWO-PHASE T-CONNECTED WINDINGS TO GET THREE-PHASE OUTPUT

William Frank Hill, 2 Oakridge Close, Stafford, Staffordshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 25, 1970, Ser. No. 22,510
Claims priority, application Great Britain, Apr. 2, 1969, 17,165/69
Int. Cl. H02k *3/28*
U.S. Cl. 310—184 **5 Claims**



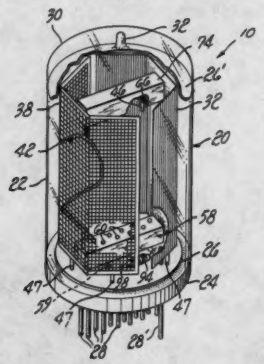
An alternator including a stator structure and a rotor structure the latter defining poles and the stator structure having stator slots equal to twice the number of poles there being disposed in the stator slots a two-phase winding which comprises a pair of windings which are disposed in the slots so that the voltages induced between the ends of the windings are in quadrature. The one winding has more turns than the other winding so that a three-phase output voltage is obtained at the ends of the windings.

3,629,637

INDICATOR TUBE WITH LEADS EXTENDING THROUGH MESA TO SUPPORT CATHODES

James Thomas Boyer, Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of application Ser. No. 631,109, Mar. 15, 1967, now abandoned. This application Apr. 1, 1970, Ser. No. 22,131
Int. Cl. H01j *61/66, 17/48*
U.S. Cl. 313—109.5 **12 Claims**



This application discloses an indicator tube which includes, in a gas-filled envelope, a stack of cathodes having upper and lower leads which are sealed in unitary bodies of insulating material, and an anode assembly which includes a back plate behind the cathodes and an optical screen in front of the cathodes. The upper body of insulating material which secures the upper cathode leads is rigidly secured between the anode back plate and screen.

Also disclosed is a method of making an indicator tube electrode assembly which comprises stacking cathode electrodes in a mold upside down, the cathodes having upper and lower leads. The upper leads, which face down, are positioned in a container filled with powdered glass and placed at the bottom of the mold. The lower leads, which face up, are threaded on a preformed glass disk which ultimately forms the base of the tube envelope. The entire assembly is heated to cause the glass powder and the glass disk to melt and form a strong, rigid mount for the cathodes through their upper and lower leads, when the assembly is allowed to cool.

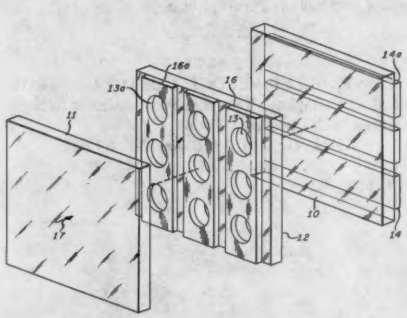
In a modification of the tube structure, which is particularly adapted for use with the above-described assembly method, the lower glass disk is replaced by powdered glass held in a suitable container in which it is melted and then solidified to form the stem of the tube.

3,629,638

PLASMA DISPLAY DEVICE WITH INTERNAL-EXTERNAL ELECTRODE STRUCTURE

Harry Veron, Framingham, and Richard Allan Carey, Sr., Marlboro, both of Mass., assignors to Sperry Rand Corporation

Filed Jan. 15, 1970, Ser. No. 3,126
Int. Cl. H01j *17/48*
U.S. Cl. 313—109.5 **4 Claims**



A gas discharge panel display device comprising a planar dielectric member having a plurality of gas cell forming holes arrayed therein and disposed intermediate a pair of exterior planar dielectric members. An electrode configuration for firing the gas cells includes an external electrode structure positioned on the outer surface of one of the exterior members operating in conjunction with an internal electrode arrangement positioned on the remote surface of the intermediate member, holes being formed in the internal electrode structure in overlaying relation with and conforming to the shape of the gas cells.

3,629,639

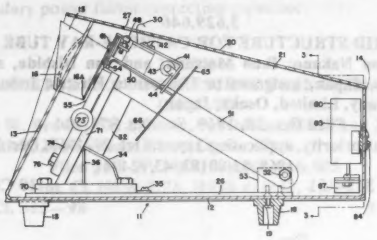
MEASURING INSTRUMENT

Bill M. McClure, Pine Bluff; John J. Berky, Little Rock, both of Ark., and George R. Savage, Kansas City, Mo., assignors to The United States of America as represented by the Secretary of the Army

Filed July 15, 1969, Ser. No. 841,716
Int. Cl. G01b *5/00*
U.S. Cl. 33—143 **9 Claims**

A gel-diffusion precipitate band reader used to measure the length of precipitate zones or bands in which a gel tube is retained in a slotted holder by a spring clip in alignment with a viewing lens, a movable hairline structure operated by a micrometer, and an adjustable structure containing a pair of

fixed hairlines. A viewing lens is located in front of the arrangement and rearwardly of the holder a fluorescent tube is



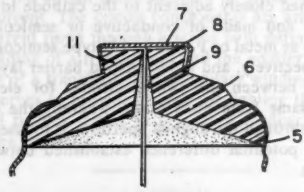
mounted adjacent a backdrop carried by the movable hairline structure.

3,629,640

LAMP BASE

Emery Audesse, Salem, and Robert Wilbur Cookson, Reading, both of Mass., assignors to Sylvania Electric Products Inc.

Filed Jan. 2, 1970, Ser. No. 371
Int. Cl. H01j *5/50*
U.S. Cl. 313—318 **4 Claims**



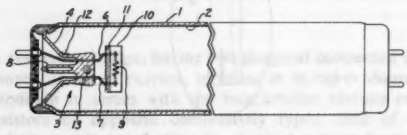
An electric lamp having a contact base, and a contact base for said lamp, the base having a metal shell closed at one end by a glass plug with a hole at its apex through which a lead-in wire can pass, a metal cylinder being fitted to the plug over the lead-in wire to be the center contact.

3,629,641

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP CONTAINING AMALGAM

Dieter Hofmann, Munich, Bernhard Kuhl, Geiselgasteig, and Erhard Rasch, Ottobrunn, all of Germany, assignors to Patent-Freuhand-Gesellschaft fur elektrische Gluhlampen mbH

Filed July 16, 1970, Ser. No. 55,396
Claims priority, application Germany, July 25, 1969, P 19 37 938.5
Int. Cl. H01j *61/20*
U.S. Cl. 313—229 **7 Claims**



A low-pressure mercury vapor fluorescent lamp containing amalgams at three different locations in order to extend the temperature range of maximum light output. The main amalgam is indium with a weight ratio of indium to mercury from 12:1 to 3:1 located at places within the lamp having temperatures from 80° to 110° C. The two additional or runup amalgams are located at places within the lamp envelope which are much hotter than the main amalgam and which attain their operating temperature successively and earlier than the main amalgam, for instance on the electrode cap and on the stem press.

3,629,642

INSULATED FILAMENT SUPPORTS

Nickolas P. Demas, Cranford, N.J., assignor to Wagner Electric Corporation

Filed Jan. 29, 1970, Ser. No. 6,772
Int. Cl. H01j *1/90*
U.S. Cl. 313—277 **5 Claims**

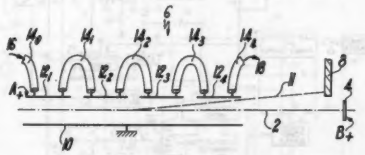
A new type of support for filaments in incandescent lamps and vacuum tubes is disclosed. The support is nonconductive, able to resist high temperatures, rigid, malleable, and it eliminates variation in rating and stability of rating in lamps and tubes caused by filament contact with the support.

3,629,643

DEVICE FOR PRODUCING BURSTS OF CHARGED PARTICLES

Michel Roche, Quetigny, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 23, 1968, Ser. No. 769,857
Claims priority, application France, Oct. 31, 1967, 126662
Int. Cl. H01j *29/76*
U.S. Cl. 315—18 **4 Claims**



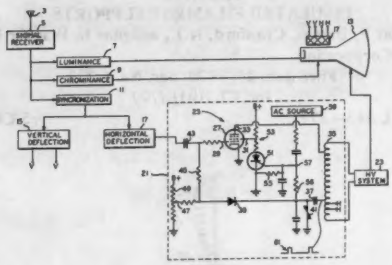
Device for producing bursts of charged particles issuing from an accelerator of the type in which the beam is alternatively directed onto a target, said active target, and onto a nonreactive target in a shifted position with respect to the active target, under control of a beam deflecting device that comprises essentially two members symmetrically disposed with respect to an axis: a plate parallel to said axis and brought to a reference potential and a plurality of identical small plates parallel to said axis, regularly distributed along it and brought to a bias potential, and sections of coaxial cable connecting the adjoining small plates whose the length is so chosen that the pulses propagating through the second member has the same propagating velocity as the beam.

3,629,644

HIGH-VOLTAGE REGULATION AND PROTECTION CIRCUIT

George Cleveland Waybright, Batavia, N.Y., assignor to Sylvania Electric Products Inc.

Filed Jan. 15, 1970, Ser. No. 3,171
Int. Cl. H01j 29/80
U.S. Cl. 315—22 9 Claims



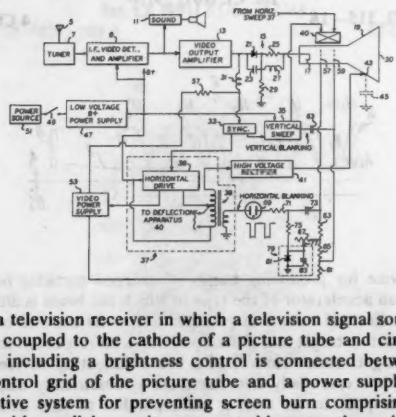
High-voltage regulation and protection circuitry includes a current-generating means in the form of an electron device having an output electrode coupled to a load circuit, a feedback bias means coupling a potential from the load circuit to a first control electrode of the electron device, and a switching means coupled to the junction of the feedback bias means and an AC source and to the second control electrode of the electron device whereby the feedback bias means regulates the load circuit potential which controls the high voltage and the switching means responds to a component failure of the feedback bias means to reduce the potential of the load circuit and the high voltage.

3,629,645

TELEVISION RECEIVER PROTECTIVE SYSTEM FOR PREVENTING SCREEN BURN

Thomas Lester Taylor, Batavia, N.Y., assignor to Sylvania Electric Products Inc.

Filed Aug. 19, 1969, Ser. No. 851,191
Int. Cl. H01j 29/52
U.S. Cl. 315—20 9 Claims



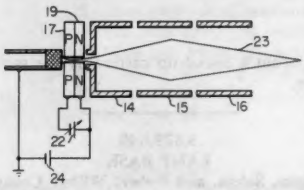
In a television receiver in which a television signal source is DC coupled to the cathode of a picture tube and circuit means including a brightness control is connected between the control grid of the picture tube and a power supply, a protective system for preventing screen burn comprising a diode with parallel capacitor connected between the variable tap of the brightness control and ground, the diode being rendered conducting in response to applied horizontal blanking pulses. Upon cessation of blanking pulses from a threshold controlled source, the brightness control tap is disconnected from ground, thereby causing the control grid voltage to increase and thus increase the beam current to discharge the high voltage stored on the picture tube before scan collapse.

3,629,646

GRID STRUCTURE FOR CATHODE-RAY TUBE

Tomoyasu Nakano; Ikuo Matsuda, and Jun Nishida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 28, 1969, Ser. No. 871,904
Claims priority, application Japan, Oct. 29, 1968, Dec. 11, 1968, 43/80183; 43/92494
U.S. Cl. 315—31 19 Claims



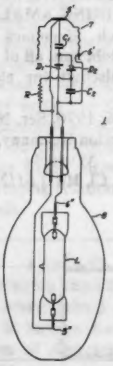
A grid structure or "electron optical system" formed integrally and used in a small-sized electron gun for focusing an electron beam generated in a cathode-ray tube, which grid structure comprises at least two disc-shaped apertured electrodes positioned closely adjacent to the cathode in parallel to each other and made of conductive or semiconductive materials such as metal or P-type and N-type semiconductive materials, respectively, and a disc-shaped barrier layer interposed fixedly between the two electrodes for electrically isolating the same from each other, whereby the electron beam passing through the aligned apertures is focused by the action of the potential difference established between the two electrodes.

3,629,647

VOLTAGE DOUBLER STARTING CIRCUIT FOR DISCHARGE LAMP

William H. Lake, Novelty, Ohio, assignor to General Electric Company

Filed July 15, 1970, Ser. No. 54,879
Int. Cl. H01j 7/44; H05b 31/30, 41/231
U.S. Cl. 315—59 4 Claims



A voltage doubler starting circuit converting the AC voltage impressed on the lamp to a DC voltage of twice the peak AC amplitude which is fed back to the lamp terminals. The circuit includes two diodes and two capacitors arranged in a

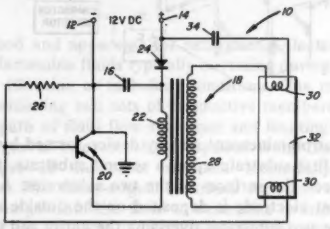
voltage doubling configuration along with a bleeder resistor, and may, if desired, be built into the lamp base or into the lamp itself in the case of a double envelope lamp. The circuit is used with a ballast of the magnetic type having a series secondary power factor correcting capacitor.

3,629,648

TRANSISTORIZED FLUORESCENT TUBE OPERATING CIRCUIT

Brent W. Brown, 175 S. Main, Providence, Utah, and Edward B. Rich, 2568 Swaner Place, Ogden, Utah

Filed July 31, 1969, Ser. No. 846,505
Int. Cl. H03k *3/28*; H05b *41/232*, *41/29*
U.S. Cl. 315—98 9 Claims



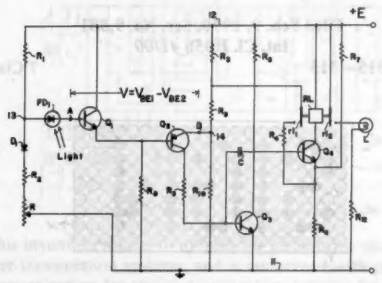
A circuit for operating fluorescent tubes ranging from 8 to 40 watts, the circuit being supplied by either direct or alternating current. The circuit components are arranged so that input current flows through a series path defined by the primary winding of a transformer and the emitter and collector junctions of a transistor. The secondary winding of the transformer serves to provide energy for lighting the fluorescent tube and further serves to provide a feedback current for biasing the transistor.

3,629,649

THRESHOLD DETECTOR FOR INCIDENT RADIATION

Giorgio Del Zotto, Milan, Italy, assignor to Ates Componenti Elettronici S.p.A., Milan, Italy

Filed Nov. 24, 1969, Ser. No. 879,461
Claims priority, application Italy, Nov. 26, 1968, 24164A
Int. Cl. H01j *39/12*
U.S. Cl. 315—159 10 Claims



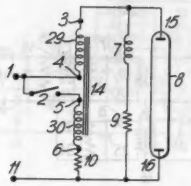
A resistance bridge, having one diagonal connected across a source of direct current, includes in its other diagonal a photodiode in series with the base/emitter circuits of two transistors of opposite conductivity types. One of these transistors controls a further two-transistor stage for operating a relay when the photodiode is illuminated; an armature of that relay exerts a latching or toggle effect by modifying the bias of two of the transistors to vary the sensitivity of the detector in a sense tending to maintain the relay in either its operated or its unoperated state.

3,629,650

METHOD AND APPARATUS FOR OPERATING A GAS DISCHARGE TUBE

Michael Alfred Patrick, Brighton, and Derek John Brittain, Goring-by-Sea, both of England, assignors to Patrick and Drew Limited, Sussex, England

Filed Nov. 21, 1968, Ser. No. 777,776
Int. Cl. H05b *41/00*, *41/10*, *41/16*
U.S. Cl. 315—177 19 Claims



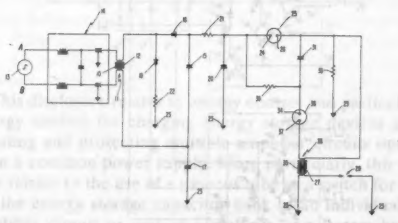
Circuits for starting and operating a gas discharge tube without the need to preheat filamentary electrodes prior to starting, including an autotransformer to provide sufficient starting potential to the discharge tube, and switch means for inhibiting transformer action following arc discharge within said tube whereupon part of the autotransformer winding performs the function of a series connected inductive ballast with said tube. Said autotransformer having a predetermined leakage inductance coacting with stray capacitance in circuit therewith to provide a high-frequency component to said starting potential for lowering said requisite starting potential. Said switch means comprising either an electromagnetic relay or magnetic shunt in the autotransformer core. There is also provision for dimming the light output of said tube by limiting its discharge current.

3,629,651

PULSE-GENERATING APPARATUS

Irving E. Linkroum, Hancock, N.Y., assignor to The Bendix Corporation

Filed Sept. 25, 1969, Ser. No. 861,120
Int. Cl. H05b *37/00*
U.S. Cl. 315—227 13 Claims



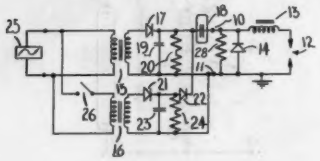
A condenser discharge-type electrical pulse-generating circuit, such as for a combustion engine ignition system, wherein two storage capacitors are charged in parallel and partially discharged in series through two control gaps and the primary winding of a high-frequency transformer, the secondary winding of which is connected in series with a high-voltage igniter gap and one of the condensers through one of said control gaps.

3,629,652

IGNITION SYSTEMS

William Henry Maycock, Coventry, and Henry James Chafer, Rugby, both of England, assignors to Rotax Limited, London, England

Filed May 27, 1969, Ser. No. 828,225
Claims priority, application Great Britain, June 10, 1968, 27,426/68
Int. Cl. H01t 15/02
U.S. Cl. 315—239 3 Claims



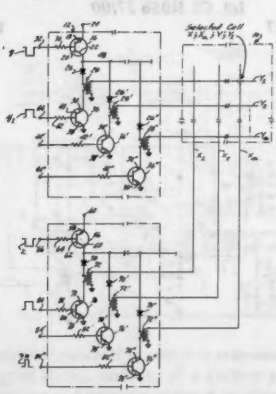
The invention relates to an ignition system for supplying energy to a spark device. The system includes a first capacitor which can be charged from a source of DC supply, a device which breaks down when the voltage across the capacitor attains a predetermined value thereby to allow the capacitor to discharge through the spark device and a further capacitor which is connected in parallel with the capacitor and which can be charged from a separate source of supply when a higher energy is required, there being provided a unidirectional current flow device in series with the two capacitors.

3,629,653

CROSSED GRID EL DISPLAY DRIVER TECHNIQUE

Munt Irwin, Elizabeth, N.J., assignor to The United States of America

Filed Mar. 23, 1970, Ser. No. 21,610
Int. Cl. H05b 37/00
U.S. Cl. 315—169 3 Claims



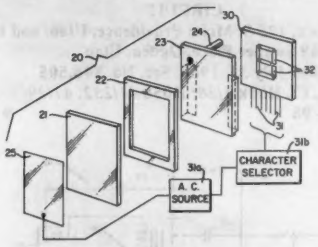
Variable brightness, crossed grid, electroluminescent panel driving circuitry and logic means are described wherein the brightness of a selected cell is controlled by the length of driver circuit input pulse. The length of the input pulse is controlled by logic means.

3,629,654

REMOVABLE ELECTRODE DISPLAY DEVICE

John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 28, 1969, Ser. No. 880,676
Int. Cl. H05b 37/00
U.S. Cl. 315—246 5 Claims



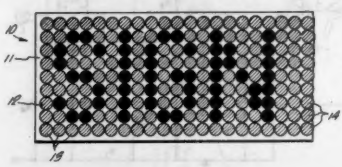
An electroluminescent display device formed by superimposing a first substrate upon a second substrate, forming a cell between the surfaces of the two substrates. A common transparent electrode is deposited on the outside surface of one of the two substrates overlying the entire cell formed by the superimposed substrates. A conductive pattern electrode, having a desired configuration, is placed in intimate contact (e.g., pressure contact) against the outside surface of the other substrate. Information is displayed by applying an alternating voltage of sufficient magnitude and frequency between the two electrodes, resulting in the ignition of an excitable gas contained within the formed cell, the illumination produced corresponding to the configuration of the conductive pattern electrode. The conductive pattern electrode is removable, since it is retained against the outside surface of the cell only by a pressure contact; therefore, the type of information to be displayed can be easily varied simply by removing the conductive pattern electrode and placing another in its place. The various designs of removable electrode patterns which can be employed are endless and can encompass Arabic numerals, alphabetic characters, and other designs.

3,629,655

LUMINOUS DISPLAY DEVICE

Dean W. Fullmer, 3981 South 3210 East, Salt Lake City, Utah

Filed Feb. 9, 1970, Ser. No. 9,881
Int. Cl. H05b 41/00
U.S. Cl. 315—313 7 Claims



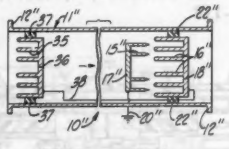
A display device adapted to be illuminated is disclosed herein having a reflective back member for carrying a spirally configured tube containing a gas such as Neon. Electrodes communicate the gas tube with a suitable power source for ignition purposes so that the ignited gas will produce a luminous glow. The devices are arranged in rows and columns and electrically couple together so as to selectively ignite a selected plurality of devices whereby a meaningful pattern is displayed, such as a letter or number, for example.

3,629,656

METHOD AND APPARATUS FOR NEUTRALIZING ELECTROSTATICALLY CHARGED FLUIDS

Frank J. Willig, 10640 Somma Way, Los Angeles, Calif.

Filed Sept. 21, 1970, Ser. No. 73,876
Int. Cl. H05f 3/00
U.S. Cl. 317—2 F 32 Claims



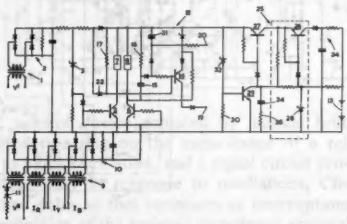
A method and apparatus for neutralizing electrostatically charged flammable fluids typically occurring during handling, agitation, filtration or turbulent conditions. The method involves positioning two sets of conductive members in series with the path of fluid flow therepast and locating the sharpened edges of one set closely spaced from the rounded blunt edges of the other set and electrically isolated therefrom. The sharp-edged members function to release electric charges into the fluid to neutralize it under the influence of an electrostatic field produced by an electrical potential between these sharp edges and the rounded blunt edges of the second set of conductive members. One set of conductive members is typically grounded and the other set operates at a potential closely related to the unbalanced charge present in the fluid being neutralized. The members of both sets are aligned generally with the path of flow therepast and are closely spaced from one another transversely of this path.

3,629,657

DC ASSISTED POWER SUPPLY

Eric Paddison, and Michael Charles Stephen Simpson, both of Stafford, England, assignors to The English Electric Company Limited, London, England

Filed Feb. 18, 1970, Ser. No. 12,330
Claims priority, application Great Britain, Feb. 18, 1969, 8,642/69
Int. Cl. H01h 47/18; H02j 7/34
U.S. Cl. 317—33 R 6 Claims



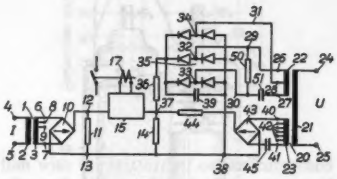
This invention relates to monitoring circuits for monitoring power transmission systems, and is concerned with providing DC energization for them. A protection scheme for a transmission system normally has a "station" battery of high voltage and capacity for operating the main circuit breakers. The voltage on this may change violently, e.g. by 50 percent, and it must also be protected from even quite small continuous discharges. The monitoring circuit is normally powered from the transmission system by the signals which it monitors, but this power is sometimes insufficient. By this invention, the "station" battery 13 is used to keep the monitoring circuit 12 continuously powered, being connected to the monitoring circuit via a voltage regulator 25-32 which is set to be cutoff in normal conditions.

3,629,658

STATIC IMPEDANCE RELAY

Anders Helge, and Torkel Johansson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 7, 1970, Ser. No. 35,504
Claims priority, application Sweden, May 8, 1969, 6507/69
Int. Cl. H02h 3/38
U.S. Cl. 317—36 D 4 Claims



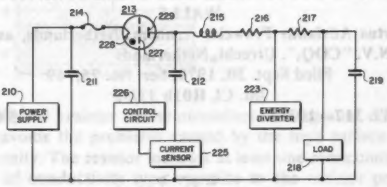
A static impedance relay for controlling a circuit includes a switch operated by a relay coil which is connected to a zero detector. The zero detector is fed with a first pulsating voltage which is proportional to the current supplied and a second voltage which is the algebraic sum of a direct voltage proportional to the voltage supply and a second pulsating voltage adjustably proportional to the voltage supply.

3,629,659

GAS TUBE ISOLATOR AND CHARGING CIRCUIT FOR PULSE AMPLIFIERS IN PHASED ARRAYS

Sol Schneider, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 4, 1970, Ser. No. 95,174
Int. Cl. H02h 7/20
U.S. Cl. 317—51 5 Claims

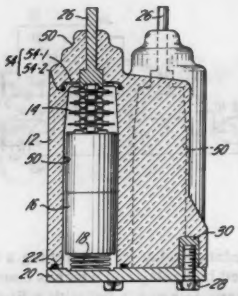


This disclosure relates to energy control and particularly to energy control for charging energy storage devices and for isolating and protecting multiple amplifier circuits operating from a common power supply. More particularly, this disclosure relates to the use of a gaseous tube as a switch for charging the energy storage capacitor bank of an individual pulse amplifier circuit or unit of a multiple unit system having a common power supply. This disclosure teaches the connection of a gaseous discharge tube as a switch between the common, main, power supply and the secondary energy storage capacitor bank of each of the pulse amplifier circuits; and the firing of the gaseous discharge tube to recharge the secondary capacitor bank between pulses. This disclosure also teaches the delay of the firing of the gaseous discharge tube under conditions such as those of a short circuit where firing could damage the individual circuit; or drain or damage the common power supply; or interfere with operation of other circuits using the same common power supply.

3,629,660
LIGHTNING ARREST ASSEMBLY

Takayoshi Kamada; Nobuo Nagai, and Shoji Tada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 80,042
Claims priority, application Japan, Oct. 15, 1969, 44/98079
Int. Cl. H02h 9/06
U.S. Cl. 317—69 4 Claims

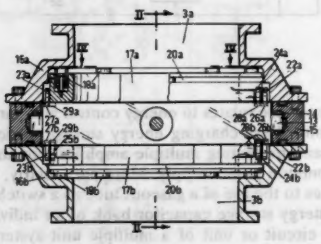


Three lightning arresters including a characteristic element in series with gaps are disposed in individual parallel openings within a single insulating housing with their longitudinal axes located at apices of a regular triangle. The openings are closed at one end on the incoming-line side by the end portion of the housing through which three terminals are sealed to be connected to the respective arresters and in which one annular metallic shield is embedded so as to be connected to each terminal.

3,629,661
METAL CLAD SWITCHGEAR FOR HIGH VOLTAGE COMPRISING COMPARTMENTS ADAPTED TO BE DIVIDED BY MOVABLE TRANSVERSE PARTITION WALLS

Egbertus Adrianus Frowein, Arnhem, Netherlands, assignor to N.V. "COQ,", Utrecht, Netherlands

Filed Sept. 30, 1970, Ser. No. 76,749
Int. Cl. H01h 33/82
U.S. Cl. 317—103 5 Claims

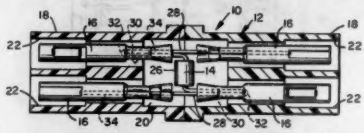


In metal clad switchgear the provision of slide valves to divide compartments in two parts which are separated from one another in a gastight manner, when said slide valves are in their closed position, said slide valves being held against movement in a direction at right angles to their plane by guides and cooperating with axially movable, coaxial sealing rings which are supported by the envelope of said compartments and forced against said slide valves by springs.

3,629,662
ELECTRONIC COMPONENT WITH LEAD REVERSELY BENT FOR PLURAL TERMINAL CONNECTIONS

Edward P. Cattey, Wallingford; Raymond H. Poturnicki, New Haven; James J. Johnston, Cheshire, and Walter J. Bedard, Meriden, all of Conn., assignors to Automatic Equipment Development Corporation, West Haven, Conn.

Filed Sept. 15, 1970, Ser. No. 72,473
Int. Cl. H05k 5/02; H01c 1/14
U.S. Cl. 317—118 12 Claims

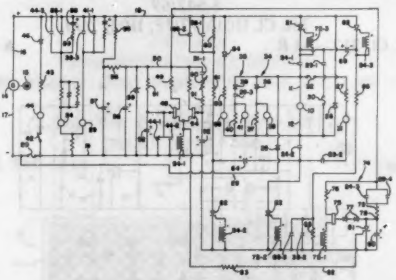


A modular electronic component for releasable plugging connection in an associated electronic circuit and having a hollow housing containing an electronic element. The element has a body and includes a pair of leads which extend outwardly from opposite ends thereof. Each lead has one portion which extends beyond the body in one direction and toward one end of the housing and another portion which is bent in a reverse direction and extends beyond the body in the direction of the other end of the housing. Two plug receptacles are attached to each lead, each receptacle being exposed at an associated end of the housing.

3,629,663
MAGNET CONTROLLER

Gediminas J. Butkus, University Heights, Ohio, assignor to N-E-M Controls, Inc., Wickliffe, Ohio

Filed Apr. 17, 1970, Ser. No. 29,551
Int. Cl. H01f 7/20, 13/00; H01h 47/32
U.S. Cl. 317—123 14 Claims



An industrial lifting magnet control circuit using semiconductors and conventional relay components for performing and timing the power switching cycles of magnet energization, discharge and current reversal for drop-off. Reversing contacts control the direction of current flow through the magnet and in one embodiment of the invention a single SCR together with a diode-resistor quench circuit provide the switching of power and the dissipation of magnet energy. Another embodiment of the invention further includes a second SCR for switching and isolation and a pair of diodes for directing and rapidly dissipating the magnet energy through the motor-generator power source. The switching SCR's are triggered by unijunction transistor timing circuits and are commutated by SCR-controlled capacitor discharge.

3,629,664

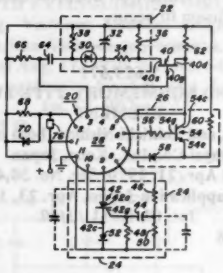
SOLID-STATE TIMING MODULE

Peter A. Lajoie, Chelmsford, Mass., assignor to Allegheny Ludlum Industries, Inc.

Continuation-in-part of application Ser. No. 811,902, Apr. 1, 1969, now abandoned. This application Nov. 12, 1970, Ser. No. 88,624

Int. Cl. H02b 1/04; H01h 47/18, 47/32

U.S. Cl. 317—141 S 8 Claims



A solid-state timing module for direct current relay control systems characterized in that a combination of timing circuits are housed on a single pronged header and provided with means for interconnecting the circuits in various configurations to effect different timing modes and timing ranges. The module eliminates the necessity for stocking a wide variety of time delay relays and results in reduction of maintenance problems.

3,629,665

TOUCH-RESPONSIVE OSCILLATOR-CONTROLLED CIRCUIT

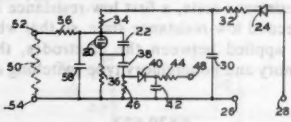
Marcel B. Hoste, Bourghebus, France

Filed Jan. 31, 1968, Ser. No. 702,112

Claims priority, application France, Feb. 1, 1967, 93291

Int. Cl. H01h 35/00

U.S. Cl. 317—146 2 Claims



Electric control device actuated by manual bridging of spaced contacts acting on the capacitance of a relaxation oscillator to block oscillation, and a signal circuit providing a signal voltage only in response to oscillations, Circuit includes a time delay so that variations or interruptions in the manual application of the resistive impedance across the contacts, as by nervous persons will not affect the signal.

3,629,666

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Masami Yokozawa, and Hitoo Iwasa, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

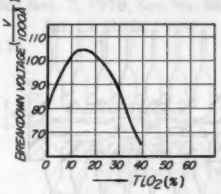
Filed Nov. 13, 1968, Ser. No. 775,355

Claims priority, application Japan, Nov. 22, 1967, 42/75585

Int. Cl. H01l 9/00

U.S. Cl. 317—234 R 3 Claims

A semiconductor device with at least one PN junction and a method of manufacturing the same wherein a passivating film or a surface film for insulation is made of a chemical mixture of oxides composed of SiO_2—TiO_2 so that the breakdown voltage and electrical stability of said PN junction can be increased. This effect is based on the suppression of movement of alkali ions in said film with the mixture of oxides. The film with the mixture of oxides composed of SiO_2—TiO_2 is obtained with a method where vapors of organo-oxy-silicon compound and organo-oxy-titanium compound are led onto a substrate, with which is heated and sustained at a predetermined temperature, and pyrolized on a surface of the substrate to make the film.



3,629,667

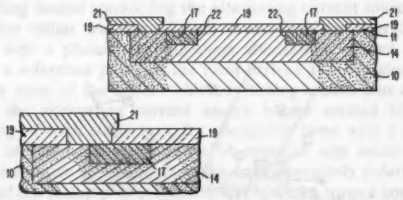
SEMICONDUCTOR RESISTOR WITH UNIFORMS CURRENT DISTRIBUTION AT ITS CONTACT SURFACE

Neil D. Lubart, Syracuse, and Madhukar B. Vora, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,351

Int. Cl. H01l 5/02

U.S. Cl. 317—234 R 2 Claims



A diffused resistor for semiconductor integrated circuits which avoids the problems caused by the high surface current density. The resistor includes at least one semiconductor region of conductivity type opposite to the resistor proper located between a pair of ohmic contacts to the resistor region. This semiconductor region diverts the current flow from the surface of the resistor region and causes a more uniform current distribution across the surface of the ohmic contacts.

3,629,668

SEMICONDUCTOR DEVICE PACKAGE HAVING IMPROVED COMPATIBILITY PROPERTIES

Ashok R. Hingorany, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

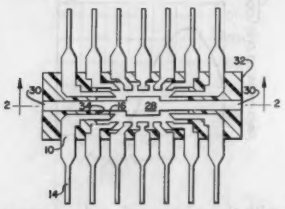
Filed Dec. 19, 1969, Ser. No. 886,713

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R 3 Claims

A semiconductor device package is provided including a lead frame formed of a first preselected conductive material which is thermally and/or chemically compatible with a support carrier material. The lead frame includes a plurality of exposed leads adapted to be interconnected in an electronic system and a plurality of associated terminals which are integrally joined to the leads by shoulder members and are

adapted to be interconnected with a semiconductor device. A semiconductor bonding pad and supporting tie bars extending from opposed ends thereof is formed of a second preselected material which is thermally and/or chemically compatible with the material from which the semiconductor device is formed, and is arranged in spaced relationship with



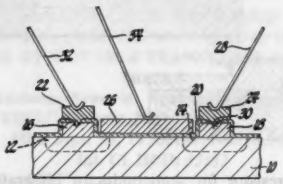
the terminals for supporting the semiconductor device. The tie bars are attached to temporary side members on the lead frame during fabrication of the unit in order to temporarily support the bonding pad in position prior to removal of the supporting side members and the completion of the encapsulation of the package in the support carrier.

3,629,669

PASSIVATED WIRE-BONDED SEMICONDUCTOR DEVICE

James E. Kauppila, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1968, Ser. No. 778,625
Int. Cl. H011 *1/14, 11/14*
U.S. Cl. 317—235 R **7 Claims**



A semiconductive device is described in which electrical contact is made with the semiconductor surface through a rupture in an overlying frangible dielectric coating. Contact is achieved by forming an electrode pad on the semiconductor surface, coating the surface of the semiconductor and the electrode pad with a frangible layer of dielectric, forming a terminal connector contact pad on the dielectric coating over the electrode pad, rupturing the dielectric layer to communicate the pads, and bonding a terminal lead to the connector contact pad. In a preferred embodiment, the rupturing and bonding steps are simultaneously achieved by compression bonding a terminal wire to the connector contact pad.

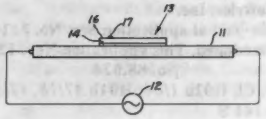
3,629,670

ELECTRICAL CONTACT TO SILICON CARBIDE

Ronald J. Perusek, Chardon, and Ralph M. Potter, Pepper Pike, both of Ohio, assignors to General Electric Company

Filed Sept. 23, 1970, Ser. No. 74,545
Int. Cl. H011 *1/14*
U.S. Cl. 317—237 **8 Claims**

Yttrium metal provides a low-resistance electrical contact to a silicon carbide wafer, useful in the manufacture of solid-state lamps. A preferred method comprises the steps of placing a small piece of yttrium on a silicon carbide wafer, and heating to cause fusion to occur.

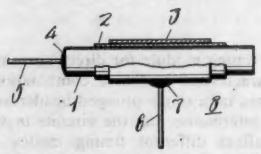


3,629,671

MEMORY AND NONMEMORY-TYPE SWITCHING ELEMENT

Naomasa Sunano, and Shinichi Nishida, both of Kyoto, Japan, assignors to Shinyei Co., Inc., Kobe, Japan

Filed Apr. 21, 1970, Ser. No. 30,445
Claims priority, application Japan, Apr. 23, 1969, 44/31763
Int. Cl. H011 *11/00*
U.S. Cl. 317—238 **6 Claims**



A semiconductor obtained by reducing a solid solution of vanadium oxide, barium oxide, and potassium oxide (or silver oxide) is disposed between electrodes, the amount of oxygen in V_2O_5 of the reduced solid solution being V_2O_x in which x is greater than 3.7 but less than 4.2. The element thus formed performs electrical switching action of memory or nonmemory type between high-resistance state and a low-resistance state. By selecting the amounts of the three constituent oxides in predetermined proportions which are variable depending upon the kind of metal serving as electrodes, a memory-type or nonmemory-type switching element can be obtained. Particularly in the case where an oxide film of a specific metal is provided between the electrodes along with the reduced semiconductor, the switching element may provide a high-resistance state, a first low-resistance state and a transitional second low-resistance state, so that when voltage is selectively applied between the electrodes, the element serves as memory and nonmemory type switching element.

3,629,672

SEMICONDUCTOR DEVICE HAVING AN IMPROVED HEAT SINK ARRANGEMENT

Peter Wilhelmus Maria Van de Water, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1970, Ser. No. 14,041
Claims priority, application Netherlands, Mar. 1, 1969, 6903229
Int. Cl. H011 *3/00*
U.S. Cl. 317—234 R **6 Claims**

A semiconductor device comprising a metal cooling plate on which a semiconductor body is arranged, a number of

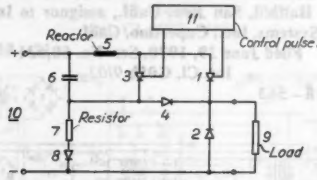
conductors electrically connected to the semiconductor body and protruding from a synthetic resin envelope. The cooling plate is located on an outer side of the envelope, and opening being provided in the cooling plate and in the envelope for passing a fastening bolt, while the part of the opening located above the cooling plate is formed by a pressure-resistant metal ring.

3,629,673

DIRECT CURRENT CONVERTOR FOR DC SUPPLY WITH EXTINGUISHING CIRCUIT

Kjeld Thorborg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 17, 1970, Ser. No. 64,447
Claims priority, application Sweden, Sept. 1, 1969, 12045/69
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **3 Claims**



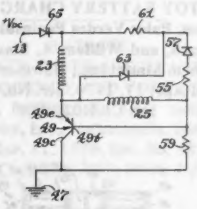
A DC converter for controlling the average value of an intermittent direct current comprises a main thyristor which is ignited with a certain frequency and provided with an extinguishing circuit having an auxiliary thyristor, the ignition of which causes the extinction of the main thyristor. The extinguishing circuit further comprises an oscillating circuit which includes a reactor and a capacitor, which reactor is in series with the main thyristor as well as the auxiliary thyristor.

3,629,674

TRANSIENT RESISTANT TRANSISTORIZED BLOCKING OSCILLATOR FOR SWITCHING INDUCTIVE LOADS

Ralph V. Brown, Cayuta, N.Y., assignor to The Bendix Corporation

Filed June 18, 1970, Ser. No. 47,496
Int. Cl. H02k *33/02*
U.S. Cl. 318—128 **16 Claims**



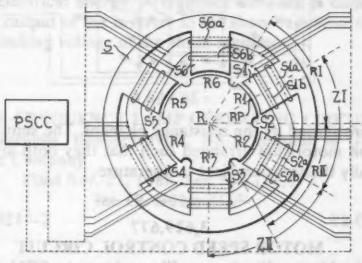
An electromagnetic fluid pump has a reciprocating plunger driven in one direction by a solenoid and driven in an opposite direction by a spring. A transistor is connected in series with the solenoid to regulate the current therethrough. The transistor is controlled by a detection coil magnetically linked to the solenoid and connected across the emitter-base junction of the transistor. A resistor network is connected in series with the detection coil to increase initial emitter to base voltage thereby assuring initial transistor conduction and to limit reverse voltages during collapse of the magnetic field of the solenoid. A series-connected diode and resistor are connected across the solenoid and the detection coil to draw current from the solenoid through the detection coil during collapse of the solenoid field, thereby protecting the transistor and providing for a rapid collapse of the field resulting in rapid plunger release and increased pump delivery.

3,629,675

CONTROL SYSTEM FOR ELECTRIC MOTORS

Nachum Porath, 59 Rothschild Blvd., Tel Aviv, Israel

Filed Nov. 2, 1970, Ser. No. 86,216
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **6 Claims**



A control system for a brushless, permanent magnet, electric motor having a rotor including at least two poles forming a rotor pole pair, and a stator including at least two poles forming a stator pole pair, each stator pole having a first and a second bifilar winding. Power supply and control means are provided for energizing the stator bifilar windings to provide polarization zones which are periodically reversed to form a rotating magnetic field for driving the rotor. The latter means comprises an alternating current source having a frequency of at least several multiples of the rate of zone reversal at maximum motor speed. The said means further comprises switching means connecting the alternating current source to the first bifilar winding of each stator pole for energizing same with a plurality of half-cycle alternations of one sign when a reference point on the rotor arrives at the beginning of one zone of the stator, which switching means also connects the alternating current source to the second bifilar winding of each stator pole for energizing same with a plurality of half-cycle alternations of opposite sign when the rotor reference point arrives at the next, oppositely polarized zone of the stator. The system further includes torque control means controlling the switching mean to control the time of initiation of energization of the energized bifilar windings during each half-cycle alternation, the energized windings being automatically deenergized by the switching means at the end of each half-cycle alternation.

3,629,676

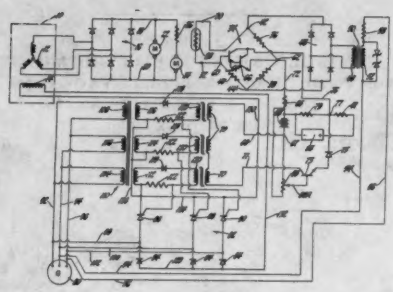
TRACTION MOTOR TEMPERATURE CONTROL OF LOCOMOTIVE POWER

Max Ephraim, Jr., Evergreen Park, and Earl D. Smith, Naperville, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1970, Ser. No. 26,861
Int. Cl. H02p *5/22*
U.S. Cl. 318—144 **4 Claims**

A system for controlling the power output of the generator of a locomotive as a function of the temperature of the traction motors connected to the generator. The system utilizes an electrical heater element connected in series with at least one traction motor and the heater generates an amount of heat which is a function of the amount of current being supplied to the traction motor. The heater element forms part of a simulator such that the temperature developed by it simulates the operating temperature of the traction motor for a given traction motor current. A temperature sensitive resistance element senses the temperature of the simulator and

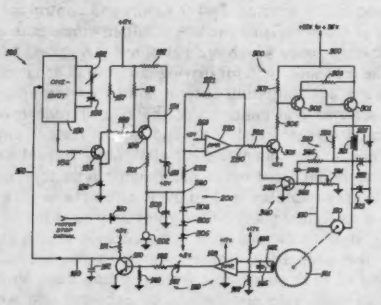
is connected with a control circuit so as to vary the excitation and output power of the generator as a function of the temperature sensed by the resistance element. The simulator and traction motors are arranged such that they both are at substantially the same ambient temperature.



3,629,677
MOTOR SPEED CONTROL CIRCUIT

Gary L. Means, Waukegan, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,470
Int. Cl. H02p 5/16
U.S. Cl. 318—341 8 Claims



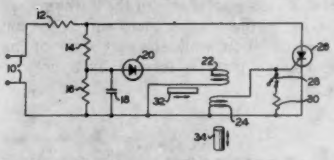
An improved circuit for precisely controlling the speed at which a motor rotates and for protecting the motor against excessive current drain. Pulses generated synchronously with rotation of the motor trigger a one-shot. The one-shot generates a nonsymmetrical square wave whose symmetry varies with the rotational speed of the motor. In one embodiment, an integrating circuit then converts this nonsymmetrical square wave into a sawtooth or triangular waveform that includes a DC component proportional in magnitude to the motor rotation speed. This waveform is fed into one input of a differential amplifier. The amplifier generates a continuous output, a pulse width modulated rectangular wave output, or no output, depending upon whether the motor is running below the proper speed, approximately the proper speed, or overspeed. This output is fed to a switching-type current regulator connected in series with the motor.

3,629,678
PROXIMITY SWITCH

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 15, 1969, Ser. No. 884,958
Int. Cl. H02p 1/08
U.S. Cl. 318—558 21 Claims

A proximity switch operable in response to the position of a movable object and including a pulse-forming circuit for generating a series of pulses in a first coil, and a detecting network including a second coil for energizing a load whenever a pulse from the first coil is induced in the second coil.

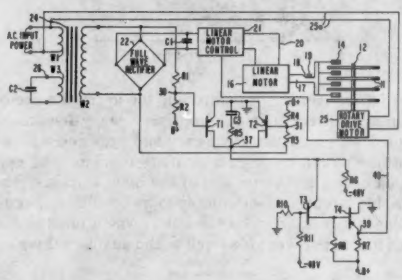


The first and second coils are positioned such that the degree of coupling therebetween is responsive to the proximity of the object for controlling the energization of the load.

3,629,679
LINEAR MOTOR POWER FAILURE DETECTION CIRCUIT AND FAIL-SAFE CONTROL

Martin O. Halfhill, San Jose, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed June 29, 1970, Ser. No. 50,631
Int. Cl. G05b 9/02
U.S. Cl. 318—563 7 Claims

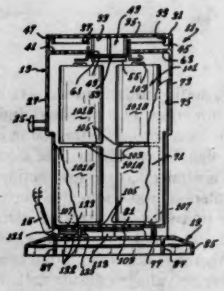


A circuit for controlling an actuator including means for setting the actuator for movement to a rest position in response to an interruption in the electrical power supplied, with the actuator being energized after the power interruption by energy stored in the circuit normally used for regulating the circuit waveform.

3,629,680
TOY BATTERY CHARGER

William R. Baynes, Palos Verdes Peninsula; John P. Hiltpold, Manhattan Beach, and William A. Staats, Torrance, all of Calif., assignors to Mattel Inc., Hawthorne, Calif.

Filed Apr. 17, 1970, Ser. No. 29,510
Int. Cl. H02j 7/00
U.S. Cl. 320—2 4 Claims



A battery charger for charging electric motor-powered toy vehicles with self-contained rechargeable batteries, the

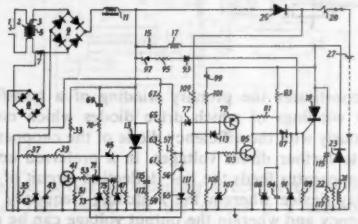
charger including a self-contained charging battery housed in a simulated vehicle service facility such as, for example, an automotive service station gasoline pump including a normally open electrical push switch connected in series with the charging battery and an electrical charging current delivery cable and connector resembling a fuel dispensing hose and nozzle. The self-contained charging battery has a greater nominal potential than the vehicle's rechargeable batteries and the charger electrical circuitry includes a series connected current limiting resistor to protect the rechargeable batteries from excessive sustained charging current flow.

3,629,681

CIRCUITS FOR CONTROLLED BATTERY CHARGERS

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited, Durham, England

Filed Apr. 8, 1970, Ser. No. 26,694
Claims priority, application Great Britain, Apr. 10, 1969, 18,486/69
Int. Cl. H02j *7/10*
U.S. Cl. 320—21 **9 Claims**



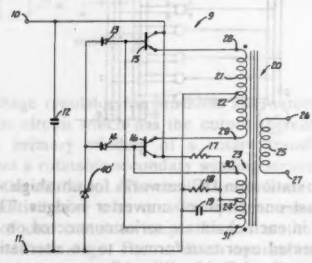
The illustrated embodiment of the invention is a circuit for a controlled battery charger comprising for connection with a source of rectified AC supply a series circuit including a semiconductor switch and having inductance and in parallel with the semiconductor switch a unidirectional conduction device in series with connections to which can be connected a battery to be charged the voltage of the battery exceeding the rectified AC supply voltage, control circuit means being provided to control the frequency of switching of the semiconductor switch whereby, in operation, during conduction of the semiconductor switch electrical energy is stored in the series circuit containing the switch as the current therethrough grows inductively while energy so stored is supplied to the battery in the intervals between conducting periods of the switch.

3,629,682

INVERTER WITH ZENER-REGULATED OUTPUT FREQUENCY AND VOLTAGE

Donald A. Boelter, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Mar. 11, 1970, Ser. No. 18,416
Int. Cl. H02m *7/52;* **H03k** *3/28*
U.S. Cl. 321—2 **4 Claims**



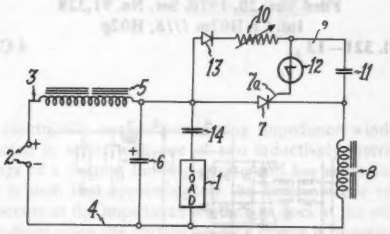
A solid-state power supply for transforming unregulated direct current electrical energy into regulated alternating current and/or direct current electrical energy. The power supply has a common collector, DC to AC inverter with a circuit for limiting the excursion of the inverter drive voltage to prevent saturation of the common collector power transistors. The power transistors in the inverter function simultaneously as power oscillators and as series regulators. A shunt regulator is connected to a pair of diodes which in turn are connected to the power transistors for controlling the excursion of the base drive voltage. The inverter is connected to a transformer which provides one or more regulated AC outputs. Rectifier-filter circuits may be connected to the output of the transformer to provide regulated direct current electrical energy. A feedback network is connected from the output of the inverter to the shunt regulator to control the limiting voltage of the shunt regulator.

3,629,683

HIGH-FREQUENCY LAMP OPERATING CIRCUIT

Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company

Filed Nov. 21, 1968, Ser. No. 777,677
Int. Cl. H02m *3/22*
U.S. Cl. 321—2 **12 Claims**



Circuit operating from a low-voltage current source for applying high-voltage, high-frequency alternating current to a load such as a gaseous discharge lamp connected across the source includes a charging capacitor and a first induction coil connected across the source and forming a first resonant circuit, a second induction coil and a controlled rectifier switch connected in series across the capacitor forming a second resonant circuit when the controlled rectifier switch is closed, and triggering means connected to the source for operating the controlled rectifier switch in accordance with a predetermined rate, the second resonant circuit operating to close the controlled rectifier switch, and the first resonant circuit operating when the switch is opened to raise the voltage and apply it to the load in high-frequency pulses for starting and operating the same.

3,629,684

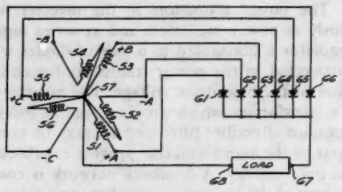
POWER SUPPLY WHEREIN STAR-CONNECTED WINDINGS ARE ARRANGED TO PRODUCE FIELDS MECHANICALLY COINCIDENT AND ELECTRICALLY OUT OF PHASE

Roland W. Christen, Garfield Heights; John C. Guyeska, Novelty, and Gerald H. Horstman, Bedford, all of Ohio, assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 23, 1970, Ser. No. 83,285
Int. Cl. H02m *5/14, 5/16, 5/20*
U.S. Cl. 321—7 **7 Claims**

A power supply comprising a polyphase source of higher frequency alternating current and a rectifying system connected to it for providing a single-phase output of a lower frequency alternating current and/or unidirectional current of one or both polarities. The polyphase source has output

windings arranged in a manner to increase the degree of utilization of the core by minimizing the net magnetomotive



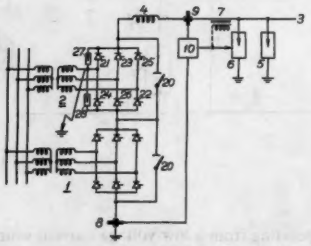
forces produced by large unidirectional current components present in the windings and tending to saturate the core.

3,629,685

STATIC CONVERTER STATION CONNECTED TO A DC TRANSMISSION LINE OVER A DC REACTOR WITH LIGHTNING ARRESTER PROTECTION MEANS

Arne Johansson, Grangesberg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 20, 1970, Ser. No. 91,328
Int. Cl. H02m 1/18; H02p
U.S. Cl. 321—13 **4 Claims**



A static converter station connected to a DC transmission line over a DC reactor is provided with lightning arrester protection means which includes a spark gap stack connected to the DC line and provided with a starting mechanism for its ignition, and with an arrangement responsive to earth faults in the station to control the starting mechanism to trigger the lightning arrester.

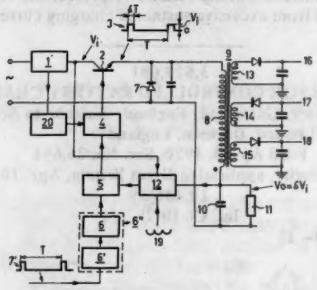
3,629,686

VOLTAGE SUPPLY APPARATUS FOR APPLYING A DIRECT CURRENT TO A PERIODICALLY VARYING LOAD

Wilhelmus Theodorus Hendrikus Hetterscheid, and Gerrit Pieter Johannes Van Schaik, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,923
Claims priority, application Netherlands, Apr. 25, 1969, 6906394
Int. Cl. H02m 7/12
U.S. Cl. 321—18 **10 Claims**

A voltage supply apparatus for feeding a periodically varying load provided with a safety circuit wherein a rectified voltage originating from the mains is converted into an output direct voltage by means of a chopper. The switching frequency of the chopper is at least equal to that of the load. The apparatus comprises measuring means by which the chopper is stopped in case of overload, while a smoothing capacitor having a comparatively low capacitance is arranged parallel to the load. After an overload the output voltage is slowly built up. For this purpose the ratio between the active period of the chopper and the period of the switching frequency must become small (≈ 0.1). This is achieved by using a thyristor as a pulse duration modulator and by having a capacitor of high value shunt a reference voltage element in the comparison circuit of the chopper. The coil of the



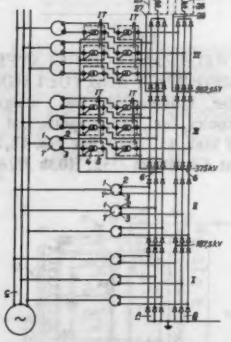
chopper constitutes the primary winding of a transformer secondary windings of which drive diodes which conduct simultaneously with the efficiency diode of the chopper so as to generate further direct voltages. In a preferred embodiment the apparatus feeds the line deflection circuit of a picture display device wherein the switching frequency is the line frequency and wherein the output voltage can be modulated by a parabola voltage of field frequency for the purpose of correcting the East-West-pincushion distortion.

3,629,687

ARRANGEMENT IN CONVERTER STATIONS FOR ULTRAHIGH VOLTAGES

Petter Hessen, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 18, 1970, Ser. No. 99,394
Claims priority, application Sweden, Jan. 5, 1970, 52/70
Int. Cl. H02m 7/00
U.S. Cl. 321—27 R **10 Claims**



In converter stations in DC networks for ultrahigh voltages there is at least one chain of converter bridges. The converter bridges in each chain are series connected on the DC side and connected over transformers to an alternating current network on the AC side. When there are two or more chains all chains are connected in parallel between earth and the transmission line in the DC network. At least some of the

apparatus connected to high potential, such as transformers, reactors and the like, have their tanks connected to the DC side of the converter chain at a point where the potential in relation to earth is at least half the voltage in the DC network.

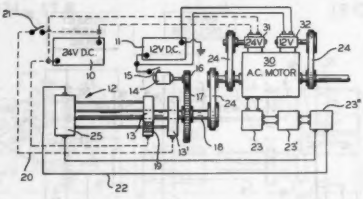
ERRATUM

For Class 321—45 C see:
Patent No. 3,629,673

3,629,688
INVERTERS

Irving E. Fink, 925 Park Road, El Paso, Tex.

Filed July 9, 1970, Ser. No. 53,471
Int. Cl. H02m 7/60
U.S. Cl. 321—50 9 Claims

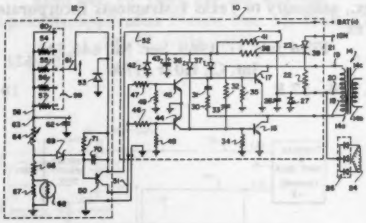


A unique device for changing direct current to alternating current. The "heart" of the device is a commutatorlike switch which provides the alternating current by continuously switching the direct current. The switch can also "generate" power using a piezo-electrical effect.

3,629,689
VOLTAGE REGULATOR FOR BRUSHLESS ALTERNATORS INCLUDING A SQUARE WAVE MULTIVIBRATOR

James A. Riff, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 13, 1970, Ser. No. 36,911
Int. Cl. H02p 9/30
U.S. Cl. 322—28 5 Claims

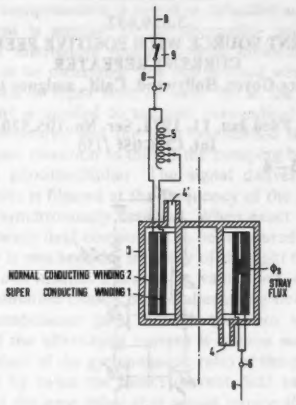


A voltage regulator for brushless alternators including an oscillator circuit which has the output thereof fed into stationary, primary winding of a rotary transformer device which has a rotatable secondary winding secured to the rotor shaft of the alternator. The oscillator is a free running, square wave multivibrator with cross coupling means between the output of one transistor stage thereof to the input of the other transistor stage. The oscillator operates at a frequency within a given range of frequencies dependent on load conditions, and the output of the oscillator is controlled by a voltage sensor between fully on and fully off conditions to regulate the power output of the alternator.

3,629,690
CURRENT LIMITING DEVICE FOR LIMITING SHORT-CIRCUIT CURRENT IN ENERGY TRANSFER SYSTEMS

Ernst Massar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 18, 1970, Ser. No. 47,222
Claims priority, application Germany, June 26, 1969, P 19 32 379.6
Int. Cl. H01v 11/06
U.S. Cl. 323—9 2 Claims

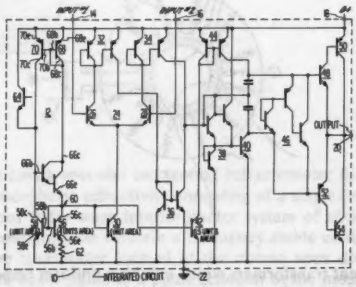


An electrically normal conducting impedance winding is connected in series with one of two inductively interlinked windings of a current limiting device and has an inductivity which is such that approximately the same electric voltage drop occurs at the impedance winding as does at the other of the windings when the current limiting device is operated at a current which is smaller than or equal to the limiting current. The series connection of the impedance winding and the one of the windings of the current limiting device is connected in parallel with the other of the windings of the current limiting device. The two windings, one of which is connected in series with the impedance winding and the other of which is connected in parallel with the series connection, have mutually opposed and substantially equal ampere turns. The one of the windings at least partially comprises superconducting material and has a critical field intensity which is exceeded when the limit value of the current is exceeded and the winding becomes electrically normal conducting.

3,629,691
CURRENT SOURCE

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation

Filed July 13, 1970, Ser. No. 54,536
Int. Cl. G05f 3/08
U.S. Cl. 323—1 15 Claims



A semiconductor current source adapted for integrated circuit fabrication. A first transistor and a second diode-con-

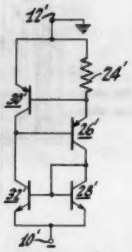
nected transistor have their base-emitter circuits coupled in parallel. A current-determining resistor is connected between the emitters of the transistors. The effective base-emitter junction area of the diode-connected transistor is greater than that of the first transistor. The collectors of the first and second transistors are coupled to feedback circuitry which tends to maintain their collector currents substantially equal despite the difference in device areas. A difference in base-emitter voltage of the two transistors appears across the emitter resistor and determines the operating current level.

3,629,692

CURRENT SOURCE WITH POSITIVE FEEDBACK CURRENT REPEATER

Ronald Bruce Goyer, Hollywood, Calif., assignor to RCA Corporation

Filed Jan. 11, 1971, Ser. No. 105,520
Int. Cl. G05f *1/56*
U.S. Cl. 323—4 **10 Claims**



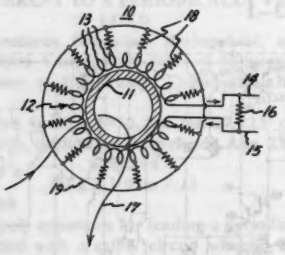
A two-terminal current-limiting or current source arrangement is coupled across a source of voltage which is subject to variations. The limiter includes a current determining resistor connected in the base-emitter circuit of a first transistor. A second transistor provides negative feedback between collector and base of the first transistor and also provides a collector-emitter circuit in series with the resistor. A current repeater is connected between the collectors of the first and second transistors and produces positive feedback to the base of the second transistor. The repeater includes a transistor, the collector-emitter circuit of which is connected to the collector of the first transistor. The voltage source is of sufficient magnitude to bias the repeater transistor and second transistor to nonsaturated conduction.

3,629,693

HIGH-PERFORMANCE CURRENT TRANSFORMERS

John M. Anderson, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 14, 1970, Ser. No. 97,919
Int. Cl. G01r *19/00*; H01f *40/06*
U.S. Cl. 323—6 **10 Claims**



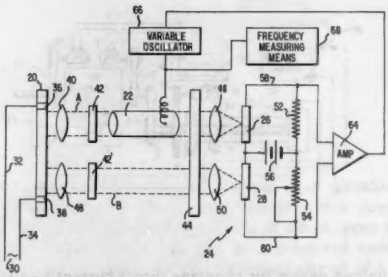
Current transformers which exhibit a uniform response and freedom from distortion as a function of frequency of currents sensed include a secondary winding having a number of turns about a suitable core. Oscillation-damping resistances are connected between electrically uniformly spaced points along the secondary winding and a common low-inductance conductor.

3,629,694

METHOD AND APPARATUS PROVIDING A DIFFERENCE SIGNAL INDICATIVE OF RADIATION ABSORPTION IN A MAGNETOMETER

Daniel P. Hearn, Tulsa, Okla., assignor to Atlantic Richfield Company

Continuation of application Ser. No. 595,185, Nov. 17, 1966, now abandoned. This application Nov. 23, 1970, Ser. No. 92,319
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 **4 Claims**



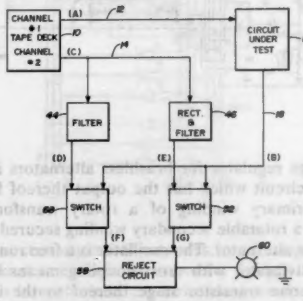
An optically pumped magnetometer including a radiation source, a radiation absorption cell through which radiation from the source passes, a radiation detector for detecting radiation passing from the absorption cell, and means for creating a radio frequency magnetic field in the absorption cell, and including a second radiation detector receiving radiation from the source but not passing through the absorption cell. The two detector outputs are combined in a balancing circuit to provide a difference signal indicative of the radiation absorption.

3,629,695

PRERECORDED ELECTRONIC TAPE CONTROLLED CIRCUIT TESTING SYSTEM UTILIZING DIGITAL SIGNAL LOGIC

Jefferson H. Taylor, Dallas, and James J. Jones, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 31, 1969, Ser. No. 846,546
Int. Cl. G01r *31/00*
U.S. Cl. 324—57 R **10 Claims**



The operation of an electronic circuit is checked by prerecorded waveforms that are converted into electrical

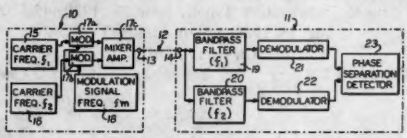
signals. One of the electrical signals resulting from the processing of the prerecorded waveforms is connected to the input terminal of the circuit being checked. Another of the prerecorded waveforms is processed into a check signal and subsequently characterized into individual synchronizing pulses. A reject indicator, which includes switching circuitry operatively responsive to the check signals and the output from the circuit being tested, is energized to indicate when a circuit does not perform to certain operational specifications.

3,629,696

METHOD AND APPARATUS FOR MEASURING DELAY DISTORTION INCLUDING SIMULTANEOUSLY APPLIED MODULATED SIGNALS

Everhard H. B. Bartelink, Concord, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.

Filed Aug. 6, 1968, Ser. No. 750,524
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **15 Claims**



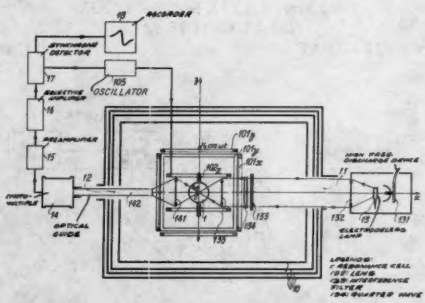
A common modulating signal is applied to a plurality of carrier signals of differing frequency to provide signals with phase coincident modulation envelopes. These are simultaneously transmitted across transmission circuit being investigated, received at distant terminal, and individually demodulated. Phase separation between demodulated envelopes is ascertained as indication of delay distortion in transmission circuit.

3,629,697

PARAMAGNETIC RESONANCE AND OPTICAL PUMPING MAGNETOMETER IN THE NEAR ZERO MAGNETIC FIELD-RANGE

Marie-Anne Bouchiat; Jean Brossel; Claude N. Cohen-Tannoudji; Jacques A. Dupont-Roc; Serge Haroche; Alfred H. Kastler, all of Paris, and Jean-Claude Lehmann, Boulogne, all of France, assignors to Agencie Nationale De Valorisation De La Recherche A.N.V.A.R., Puteaux, France

Filed Dec. 10, 1969, Ser. No. 883,900
Claims priority, application France, Dec. 12, 1968, 177928
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 **9 Claims**



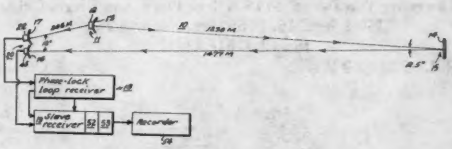
Magnetometer for measuring steady magnetic fields of steady direction in the range of the nanogauss field intensities. The apparatus is generally used for measuring weak fields in a limited region of the inside of a magnetic shield envelope and comprises a paramagnetic resonance cell, three direct current pairs of Helmholtz coils the axis of which form a three-dimensional rectangular coordinate system, the origin point of which lies in said resonance cell, and a pair of alternating current Helmholtz coils having its axis coinciding with one selected axis among those of the direct current coils. DC currents are applied to the direct current coil pairs and are adjusted to obey approximately compensate the field in said region except in the direction of said selected axis, along which exact compensation is aimed at, trihedral and an alternating current is applied to the alternating coil pair and produces an alternating magnetic field colinear with the steady field to be measured. The cell is filled with atoms of alkaline metals in vapor state or with ^4He in the state 2^3S_1. Pumping light is applied to the cell perpendicularly to the field to be measured and the light transmitted through the cell in the same direction as that of the pumping beam is collected on a photomultiplier. The signal delivered by the photomultiplier is filtered at the frequency of the alternating current and synchronously detected. When exact compensation of the steady field component to be measured along said selected axis is reached, the intensity of the light transmitted through the cell reaches a maximum value, and, in the light intensity modulation caused by the alternating field, the odd harmonic components pass through the zero value. The frequency of the alternating current is chosen much higher than the product of the gyromagnetic ratio of the material inside the cell by twice the direct current field variation on either side of the zero value that would reduce the light intensity change caused by the latter field to half its maximum value, and; the amplitude of the alternating field is given an optimum predetermined value. The value of the steady field component to be measured is calculated from the direct current intensity in the coil having said selected axis, while the direct current intensities in the other coils are so adjusted that the variation of said light intensity modulation as a function of the value of the latter current intensity be as sharp as possible.

3,629,698

MESOCAVITY SPECULAR INTEGRATOR REFRACTOMETER

James J. Lamb, Sierra Vista, Ariz., assignor to The United States of America as represented by the Secretary of the Army

Filed Apr. 21, 1970, Ser. No. 30,404
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 B **4 Claims**



A mesocavity specular integrating refractometer for measuring atmospheric refractivity consisting of a single-frequency coherent radio wave interferometer system of obtuse triangular configuration wherein a frequency stable continuous microwave transmitter located at the obtuse apex directs a microwave beam signal to a plane reflector at the most acute apex of the configuration which reflects and critically aims the microwave beam signal to the less acute apex where is

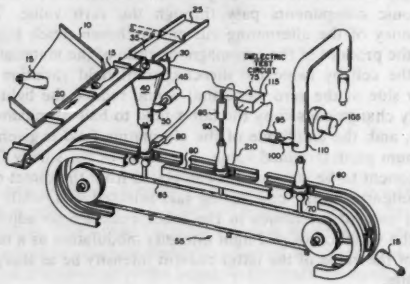
located receiver means comprising a phase-lock loop receiver in combination with its slave receiver. The phase-lock loop receiver is phase-locked to the direct microwave beam signal and supplies locally generated oscillatory energy to the slave receiver for intermediate frequency conversion, detection and phase reference. The second receiver is oriented most favorably to the critically aimed reflected beam and has incorporated therein a phase comparator providing as an output a resultant difference voltage proportional to the phase angle between the intermediate frequency voltages of the second receiver which are derived from the direct and reflected microwave beams or signals. This output is a varying DC voltage directly proportional to variations in the atmospheric refractivity.

3,629,699

APPARATUS FOR DIELECTRIC TESTING OF CONTAINERS HAVING AN EXPANDABLE CAPACITIVE ELECTRODE

Raymond G. Voss, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 22, 1969, Ser. No. 826,818
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R **9 Claims**



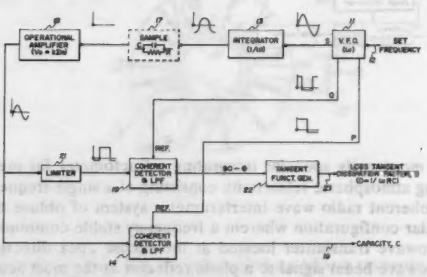
Apparatus for dielectrically testing the bottom region of a container to determine the existence of pinholes, inhomogeneities, and thin walls which comprises in part an expandable element adapted to be inserted into the neck of a container to be tested and thereafter expanded into testing position wherein one plate of a capacitance element is formed by the expansion of the element into testing position.

3,629,700

CAPACITANCE AND DISSIPATION FACTOR MEASURING APPARATUS HAVING COHERENT DETECTORS

Stanley A. Yalof, Rte. 1, Box 720, Escondido, Calif., and Lawrence Van Doren, 5119 Arlene Place, San Diego, Calif.

Filed Sept. 16, 1969, Ser. No. 858,266
Int. Cl. G01r 11/52
U.S. Cl. 324—60 R **5 Claims**



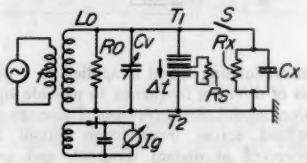
A dielectric meter for measuring electrical characteristics of a dielectric sample having resistive and capacitive components in which a variable-frequency oscillator has a sine wave output coupled through an integrator with a 1-watt transfer characteristic into a sample; the output of the sample being coupled through an operational amplifier to the input of a first coherent detector and through a limiter to the input of a second coherent detector; the first coherent detector having a reference input comprising an inphase square wave signal from the variable-frequency oscillator and the second coherent detector having a reference input comprising a quadrature square wave signal output coupled from the variable-frequency oscillator; the output of the first coherent detector having an amplitude directly proportional to the capacitor component of the sample and the output of the second coherent detector being passed through a tangent function generator yielding a loss tangent dissipation factor.

3,629,701

PRECISION VARIABLE RESISTOR FOR HIGH-FREQUENCY USE

Bunjiro Ichijo, 2-23-10 Hirosawa, Hamamatsu, Japan

Filed Aug. 11, 1970, Ser. No. 62,835
Claims priority, application Japan, June 16, 1970, 45/52099; Aug. 15, 1969, Japan, 44/64617
Int. Cl. G01r 27/02
U.S. Cl. 324—62 R **3 Claims**



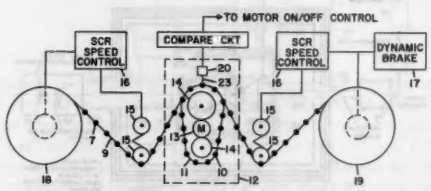
A precision variable high resistor for high-frequency use comprises a complex series condenser composed of three spaced, parallel plates. The intermediate plate is mechanically movable relative to the pair of outer plates in parallel relation thereto. The three plates comprise discs of dielectric material having thin metal electrodes attached to their facing surfaces; and the electrodes attached to their facing surfaces; and the electrode which is attached to one of said outer plates, and which faces said intermediate plate, is grounded. A fixed resistance is connected between said grounded electrode and the facing electrode on said intermediate plate.

3,629,702

AUTOMATIC TESTER FOR A PLURALITY OF DISCRETE ELECTRICAL COMPONENTS SUPPLIED IN A REPETITIVE PREDETERMINED SEQUENCE

Heinz F. Henken, East Northport, N.Y., assignor to Hazeltine Corporation

Filed Mar. 9, 1970, Ser. No. 17,833
Int. Cl. G01r 15/12
U.S. Cl. 324—73 AT **6 Claims**



Disclosed is an automatic component tester which accepts a plurality of supplied electronic components arranged in a repetitive predetermined sequence and compares them to a reference sequence of corresponding sample components.

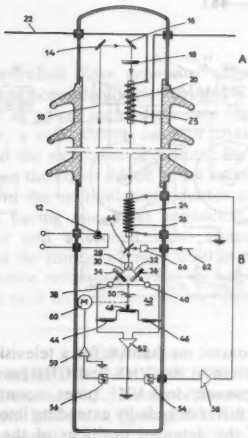
The apparatus includes a motor-driven mechanism for accepting a conveyor of such supplied components and advancing both conveyors through an inspection station such that the components pass therethrough in pairs. Further included in a comparison circuit, which is momentarily connected to each pair of components as it passes through the inspection station and which provides an output indication whenever a selected difference in the electrical characteristics of a supplied and a reference component is detected.

3,629,703

BALANCED BRIDGE OPTICAL TRANSMISSION TELEMETERING DEVICE FOR MEASURING AN ELECTRICAL QUANTITY ASSOCIATED WITH A POWERLINE WITH AN INDEPENDENT OPTICAL BALANCING SYSTEM

Georges Bernard, Saint-Egreve, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed June 30, 1970, Ser. No. 51,264
Claims priority, application France, July 7, 1969, 6923035
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 **7 Claims**



Telemetering device for sensing an electrical quantity such as the current or the voltage associated with a high-voltage powerline. The rotation of the polarization plane of a polarized light beam directed from the vicinity of said powerline to ground and having traversed a magneto-optically or electro-optically transducer sensitive to said quantity is measured at a ground station where the light beam is divided in a pair of elementary beams directed to a pair of photoelectrical devices inserted in a measuring bridge. The bridge is balanced by a servomechanism controlled by the electrical error signal produced in the bridge under the influence of an independent second divided light beam.

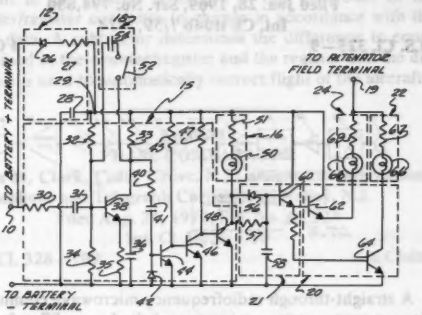
3,629,704

AUTOMOTIVE ELECTRICAL SYSTEM TEST APPARATUS

Carlile R. Stevens, 1000 Ironwood Place, Alamo, Calif.

Filed Nov. 24, 1967, Ser. No. 685,456
Int. Cl. G01r *31/00, 19/16*
U.S. Cl. 324—158 MG **11 Claims**

An automobile alternator and voltage regulator test apparatus which may be connected to the electrical system of a car without altering the existing wiring. The test apparatus analyzes the waveform and magnitude of the ripple voltage superimposed on the alternator output, and also senses the voltage level present at the field terminal of the alternator. In



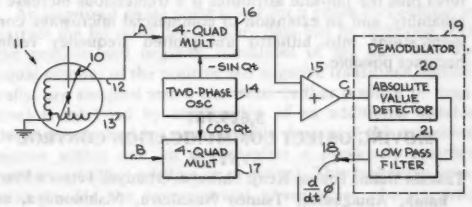
response to the detected ripple characteristics and measured field voltage, the device provides an unambiguous visual indication of which components, if any, are malfunctioning.

3,629,705

METHOD AND APPARATUS FOR DETERMINING ANGULAR VELOCITY

Ronnie G. Walters, Mayfield Heights, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 21, 1969, Ser. No. 851,975
Int. Cl. G01p *3/48*
U.S. Cl. 324—173 **10 Claims**



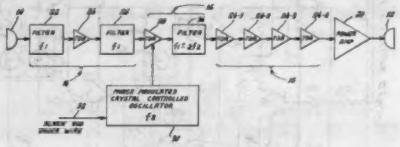
Apparatus is disclosed for determining angular velocity using a resolver and multiplying its stator (orthogonal vector component) signals by signals representing the functions $-\sin Qt$ and $+\cos Qt$, combining the products arithmetically, and demodulating the sum signal. The demodulator output is proportional to the magnitude of angular velocity. For a velocity signal with proper sign, the stators are driven by the signals representing the functions $-\sin Qt$ and $+\cos Qt$ to obtain a signal across a high impedance (constant current) source which, upon compensation for phase shifts introduced by the resolver, is used as a reference in determining the proper sign for a velocity signal. When the stator signals are replaced by orthogonal vector component signals of any vector, rectangular to polar coordinate conversion is achieved. A DC signal proportional to the vector angle is obtained by a circuit which detects the phase difference between the sum signal and the signal representing the function $\cos Qt$.

3,629,706

STRAIGHT-THROUGH R.F. MICROWAVE COMMUNICATIONS REPEATER SYSTEM USING TUNNEL DIODE AMPLIFIER FOR CONSTANT POWER OUTPUT LEVEL

Norman E. Chasek, Stamford, Conn., assignor to International Microwave Corporation, Cos Cob, Conn.

Filed Jan. 28, 1969, Ser. No. 794,680
Int. Cl. H04b 1/59, 7/14
U.S. Cl. 325—9 4 Claims



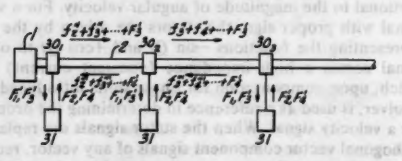
A straight-through radiofrequency microwave communications repeater system using tunnel diode amplifier for constant power output level in spite of changes in input power level over very wide ranges without distortion, i.e. a novel limiting action which is substantially perfect over a very wide range of input levels such as occurs by "fading" of the input signals. The output level is kept constant on an instantaneous basis independent of the input level without frequency distortion, without AM to phase modulation distortion, thus providing nearly perfect limiting action over a wide dynamic range of received signal levels. Automatic gain control is obtained without any feedback arrangements. A fail-safe action is provided by the novel arrangement of the tunnel diode amplifier modules coupled in cascaded relationship. In the illustrative embodiment a tunnel diode amplifier translator provides frequency conversion with zero db conversion loss and with a translation of the input signal by an amount of twice the frequency of the local oscillator, while the carrier signal is suppressed. Other frequency translators may be used if desired. A great reduction in the number of components is attained, while a greatly increased bandwidth capability is achieved, i.e. up to 500 megaHertz, the result of these features plus the fail-safe attributes is a tremendous increase in reliability, and an extension of commercial microwave communications into hitherto unexploited frequency realms becomes possible.

3,629,707

MOVING OBJECT COMMUNICATION CONTROL SYSTEM

Takeshi Baba, Tokyo; Kenji Shibuya, Ohmiya; Tetsuro Maruhama, Amagasaki; Tsuneo Nakahara, Nishinomiya, and Kenichi Yoshida, Sakai, all of Japan, assignors to Japanese National Railways; Mitsubishi Electric Corp., Tokyo and Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed July 28, 1969, Ser. No. 845,167
Claims priority, application Japan, July 30, 1968, 43/54099
Int. Cl. H04b 1/00
U.S. Cl. 325—53 8 Claims



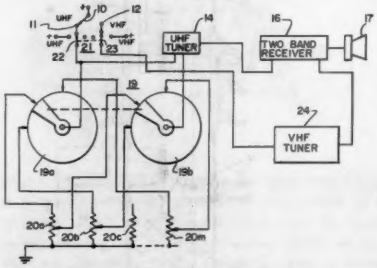
A communication system between mobile and wayside stations wherein the mobile stations are traveling on a track which is divided into sections by means of an open-type transmission line paralleling the track. A frequency selection and conversion device for each section of transmission line or track is connected to the transmission line to define the length of each section. A series of lower frequency carriers transmitted on the line are allotted respectively to each specific section of transmission line. These low-frequency carriers travel with a low loss along the transmission line and they are selected and converted by their respective frequency selection and converter device to a common high-frequency carrier signal for leaky transmission to a mobile station on the corresponding track section. These signals are used for train control and other communication signals may be transmitted on the same transmission line by a high-frequency carrier signal which is common to all sections, such that the common signal will leak from the transmission line for reception by a mobile station no matter its location on the track.

3,629,708

VHF–UHF TUNER MECHANISM FOR TELEVISION RECEIVERS

Orville D. Thurnell, St. Charles, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Sept. 16, 1969, Ser. No. 858,452
Int. Cl. H04b 1/16
U.S. Cl. 325—461 13 Claims



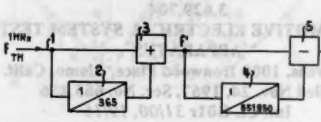
A tuner control mechanism for a television receiver capable of operation in the VHF and UHF bands of frequencies includes a conventional VHF tuner mounted on a common shaft with a turret of radially extending linear potentiometers for each of the detented positions of the VHF tuner. The linear potentiometers are used to provide a tuning voltage for a varactor tuned UHF tuner, and a band select switch is located for operation by a rotary cam which is rotated with the VHF and UHF tuner elements in order to effect selection of the band of frequency to which the television receiver is to be tuned for each detented position of the mechanism.

3,629,709

ELECTRONIC FREQUENCY CONVERTER

Jean Engdahl, Neuchatel, Switzerland, assignor to S. A. Ebauches, Neuchatel, Switzerland

Filed Dec. 17, 1969, Ser. No. 885,884
Claims priority, application Switzerland, Dec. 20, 1969, 19087/68
Int. Cl. H03b 19/00
U.S. Cl. 328—15 8 Claims



An electronic frequency converter for digitally converting the frequency of a first pulse series at a frequency cor-

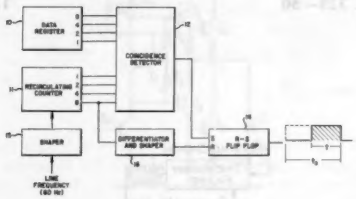
responding to mean time or atomic time into a pulse series at a frequency corresponding to sidereal time by pulse addition and pulse subtraction.

3,629,710

DIGITALLY CONTROLLED PULSE GENERATOR

Douglas H. Durland, Palo Alto, Calif., assignor to Beckman Instruments, Inc.

Filed Dec. 16, 1970, Ser. No. 98,724
Int. Cl. H03k *5/04, 23/02*
U.S. Cl. 328—58 **10 Claims**



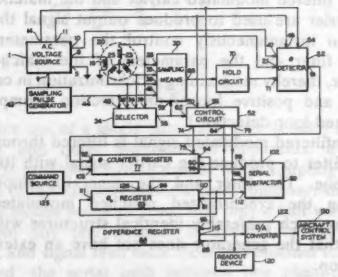
A digitally controlled pulse generator whose duty cycle may be rapidly and accurately varied to supply a load with a required amount of power including a data register, a recirculating counter, a coincidence detector connected to the memory unit and the recirculating counter for providing an output signal when the count stored in the memory unit coincides with that in the recirculating counter and a bistable storage element having one input connected to the coincidence detector and a second input connected to the counter such that the storage element is set in one state each time the coincidence detector provides an output signal and in the other state each time the counter recycles to zero.

3,629,711

THREE WIRE DIGITAL SYNCHRONIZER

John C. Strole, Dumont, N.J.; Laszlo I. Szerenyi, Frederick, Md., and Harold Morelines, Springfield, N.J., assignors to The Bendix Corporation

Filed June 18, 1968, Ser. No. 738,045
Int. Cl. H03k *17/00*
U.S. Cl. 328—72 **8 Claims**



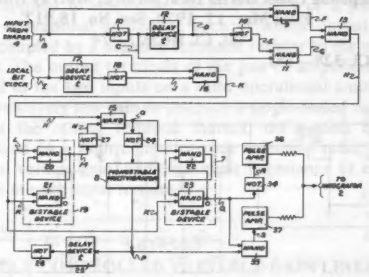
A three-wire digital synchronizer for use in an aircraft for synchronizing flight data to prevent an abrupt change in aircraft attitude when switching from manual to automatic control. Converting means are provided for converting the intermediate output of a three-wire signal device, such as a synchro, to pulses related in quantity to the actual flight of the aircraft. A counter/register counts the pulses and applies the count to a register until control of the aircraft is switched from manual to automatic control whereupon the count present in the register is locked in but the count in the counter/register continues to change in accordance with the flight data. A subtractor determines the difference in count contained in the counter/register and the register and the difference is used to automatically correct flight of the aircraft.

3,629,712

PHASE COMPARATOR

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 24, 1970, Ser. No. 66,324
Int. Cl. H03k *5/20*
U.S. Cl. 328—109 **6 Claims**



An improved phase comparator for a phase-locked loop to extract the bit clock from binary data bits by detecting both the positive and negative transitions of the data bits. An equal number of the positive and negative transitions, statistically, are sampled and a transition (either positive or negative) is inhibited by cooperation of an additional bistable device controlled by a monostable device, if this transition occurs within one bit period after a previously sampled transition (either positive or negative). This technique compensates for the asymmetrical phase noise characteristic present due to transition jitter when only one transition of the data bits are detected and prevents an attempt at 100 percent duty cycle operation of the monostable device when both transitions of the data bits are detected.

3,629,713

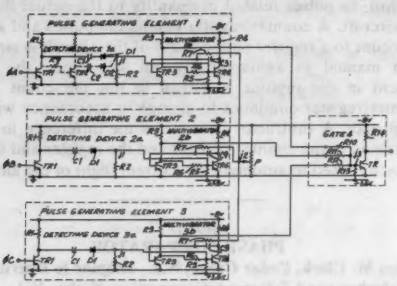
METHOD OF OBTAINING THE SIGNAL DEPENDENT UPON THE PERCENTAGE ASYMMETRY OF A 3-PHASE SYSTEM

Stanislaw Szpilka, plac Grunwaldzki 4/84, Katowice, Poland

Continuation-in-part of application Ser. No. 672,238, Oct. 2, 1967, now abandoned. This application June 1, 1970, Ser. No. 42,256
Int. Cl. H03b *3/04;* **H03k** *5/20*
U.S. Cl. 328—149 **4 Claims**

For a three-phase input signal, three detecting circuits for generating triggering pulses when the phases reach predeter-

mined magnitudes and monostable circuits generating rectangular pulses under the control of the triggering pulses, there



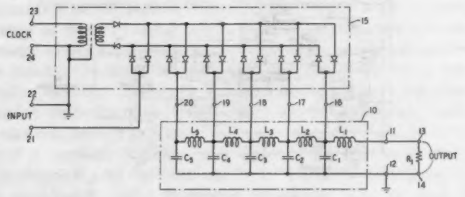
further being a gate to generate an output signal when the three-phase signal is unbalanced.

3,629,714

ELECTRONIC SAMPLING AND HOLD CIRCUIT

Ronald Lee Earp, Burlington, N.C., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 12, 1970, Ser. No. 18,912
Int. Cl. H03k 17/74
U.S. Cl. 328—151 5 Claims



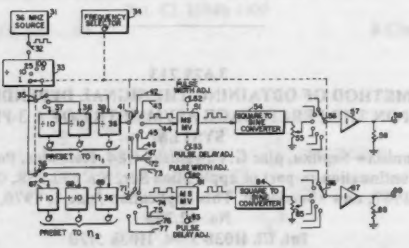
A sample and hold circuit is disclosed in which a gate is enabled to apply a wave sample to the capacitors of a delay line whereupon energy is stored in the capacitors. When the gate is disabled, the stored energy is discharged with the line being effective to produce a relatively flat-topped output over a period of time following the disablement of the gate.

3,629,715

DIGITAL PHASE SYNTHESIZER

Benjamin W. Brown, Nashua, and James A. Valentino, Salem, both of N.H., assignors to Sanders Associates Inc., Nashua, N.H.

Filed Oct. 15, 1969, Ser. No. 866,550
Int. Cl. H03b 3/04
U.S. Cl. 328—155 11 Claims



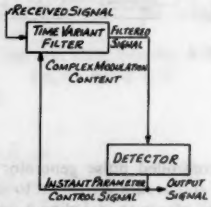
A method and apparatus for generating two series of repetitive signals having the same selectable repetition frequency but differing in phase by a precisely selectable amount in which repetitive signals are generated and then counted simultaneously in two series starting with different preselected initial counts and in which first and second output signals are generated each time each count reaches a predetermined count and integral multiples thereof.

3,629,716

METHOD AND APPARATUS OF INFINITE Q DETECTION

Donald F. Dimon, Pittsburgh, Pa., assignor to Infinite Q Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1969, Ser. No. 809,675
Int. Cl. H03d 3/18
U.S. Cl. 329—50 12 Claims



The method of maintaining positive locked-on detection with instantaneous locked-on filter tracking of a complex modulated carrier signal by instantaneous employment of the complex modulation content of the signal to respectively provide complex-angularly locked-loop detection of any modulated carrier and exclude all other signals and noise not a part of the modulated carrier signal to provide detection of infinite Q capabilities and the structure thereof.

Locked-on tracking is obtained by instantaneously and continuously filtering the modulated carrier signal by synchronously filter-tracking the same with the modulation excursions thereof.

To maintain synchronization with the unfiltered modulated carrier signal, synchronous demodulation is preferred whereby a matched signal (matched to the filtered signal) is generated and synchronously demodulated with the filtered signal and the modulation excursion or content signals of both the filtered modulated carrier and the matched modulated carrier are used to produce output signal that is employed to instantaneously control the parameters of the tracking filter and the parameters of the matched signal generator, thereby maintaining synchronization in continuous tracking and positive locked-on detection (complex-angularly locked-loop detection).

The unfiltered modulated signal is filtered through a time variant filter to produce the carrier signal with its modulations alone. The filter and the generator employed for producing the synchronized matched modulated carrier signal, are each preferably identical structures with the exception that the generator does not have an external input connection.

The filter and generator preferably include as one example embodiment, a connected closed loop series circuit having a multiple input inverter and a first and second integrator, each integrator having variable parameters that are controlled by the modulation content of the filtered signal obtained through a detection process.

3,629,717

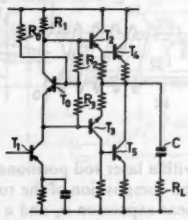
CIRCUIT ARRANGEMENT FOR STABILIZING AGAINST VARIATIONS IN TEMPERATURE AND SUPPLY VOLTAGE

Jorgen Peter Christian Vilhelm Bisgaard, Copenhagen, Denmark, assignor to North American Philips Company Inc., New York, N.Y.

Continuation of application Ser. No. 481,699, Aug. 23, 1965, now abandoned. This application Mar. 29, 1968, Ser. No. 717,461

Int. Cl. H03f 1/32, 3/04

U.S. Cl. 330—23 13 Claims



A temperature dependent element for bias stabilizing transistors comprises a transistor connected as a negative feedback amplifier with a voltage divider for applying a predetermined portion of the collector-emitter voltage to the base. The collector-emitter path of the transistor is connected in parallel with the emitter-base paths of the transistors to be stabilized. A resistor connected between the divider and the operating source may be provided to stabilize the bias of the transistors against supply voltage variations.

3,629,718

MULTICHANNEL DYNAMIC LEVEL CONTROL CIRCUIT

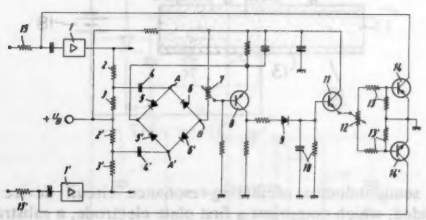
Eberhard Klein, and Hans-J Zabel, both of Hildesheim, Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Jan. 22, 1970, Ser. No. 5,047

Claims priority, application Germany, Mar. 20, 1969, P 19 14 071.7

Int. Cl. H03g 3/30

U.S. Cl. 330—29 3 Claims



To enable use of a single automatic gain control amplifier in stereo, and other multichannel apparatus, a control transistor is provided, having similar input coupling circuits, connected to the various channels, over condenser-diode networks, the diodes being so poled that only a half wave of the signal from any one channel is applied to the control transistor, and signal feed back from one channel to another is inhibited, the serial path between two channels being formed by serially connected, oppositely poled diodes; preferably, the AGC output stage has a center tapped, adjustable resistance as its input, compensation for inequality between amplifier characteristics with respect to the various channels being done by adjusting the exact position of the center tap.

3,629,719

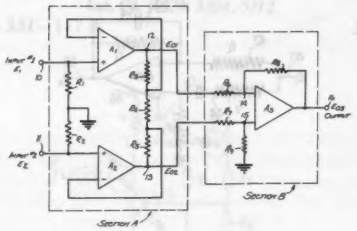
DIFFERENTIAL AMPLIFYING SYSTEM

Oscar Heller, Brooklyn, N.Y., and John A. Chmiel, Linden, N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,166

Int. Cl. H03f 2/00

U.S. Cl. 330—69 4 Claims



A differential amplifying system in which two signal voltages are applied to respective positive inputs of a pair of high-gain operational amplifiers, each of whose output terminals is coupled by a negative feedback resistor to the negative input. The output terminals of the pair of amplifiers are connected to the two inputs on a third operational amplifier having a relatively low gain to produce a single-ended output voltage at the output terminal thereof, the system being characterized by a high common-mode rejection ratio, high differential voltage gain, and high-input impedance of equal magnitude at each input terminal.

3,629,720

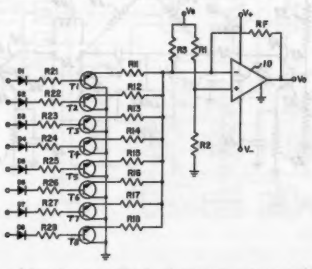
DIGITALLY CONTROLLED VARIABLE-GAIN LINEAR DC AMPLIFIER

Adel S. Sedra, 66 Pacific Avenue #1412, Toronto, 65, and Kenneth C. Smith, 92 Pettit Drive, Weston, Ontario, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 12, 1970, Ser. No. 18,930

Int. Cl. H03g 3/00

U.S. Cl. 330—86 4 Claims

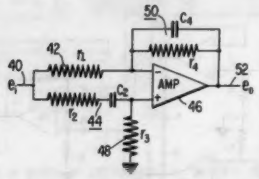


A digitally controlled variable gain linear DC amplifier consisting of a resistance bridge in which the resistance of one arm is determined by "*n*" binary weighted resistors connected in parallel and adapted to be switched in or out of the circuit by a *n*-bit binary control signal has its output connected to the input of an operational amplifier having a feedback resistor of equal value to the resistance of one arm of the bridge. The gain of the amplifier is determined by the resistance value of the "*n*" binary weighted resistors in relation to the resistances in the other arms of the bridge and the feedback-resistance of the amplifier.

3,629,721
ORTHOGONAL FILTERS

William Fulmer Fordyce, Woburn, and Edmund John Mitchell, Auburndale, both of Mass., assignors to RCA Corporation

Filed July 30, 1969, Ser. No. 846,029
Int. Cl. A03f 1/36
U.S. Cl. 330—107 2 Claims

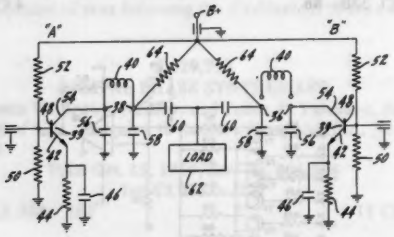


An orthogonal filter is synthesized from a transfer function. The elements are calculated exactly, as opposed to trial and error. Filters are provided having a first and second impedance connected to the first and second input terminals of a differential amplifier, a third impedance connected between one input terminal of the amplifier and a point of reference potential and a fourth impedance is connected between the other input terminal and the output terminal of the amplifier.

3,629,722
BACK-TO-BACK OSCILLATOR SWITCHING ARRANGEMENT

Eugene C. Walding, Arlington Heights, Ill., assignor to Oak Electro/Netics Corporation, Crystal Lake, Ill.

Filed Feb. 19, 1970, Ser. No. 12,599
Int. Cl. H03b 5/12; H03j 5/28
U.S. Cl. 331—48 8 Claims

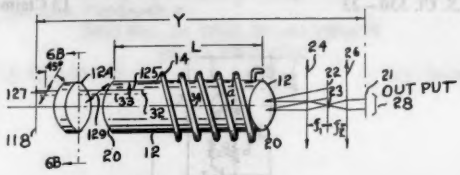


A switching arrangement including a rotatable shaft and a detent controlling position of the shaft. Mounted on the shaft are a pair of circuit element carriers, each including a plurality of similar circuit elements and having peripheral blades for use in making electrical connection with the circuit elements. Positioned alongside of the shaft are stationary clips, which are arranged relative to the shaft and the circuit element carriers such that at each position of the rotatable shaft, as controlled by the detent, only one circuit element will be connected to the stationary clips. Oscillator circuit means are associated with the stationary clips. At each position of the rotatable shaft only one circuit element is connected in operable electric circuit with the oscillator means.

3,629,723
ATHERMAL LASER USING A ONE-EIGHTH WAVE FARADAY ROTATOR

Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of application Ser. No. 375,568, June 16, 1964, now abandoned. This application Apr. 21, 1969, Ser. No. 817,867
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 9 Claims

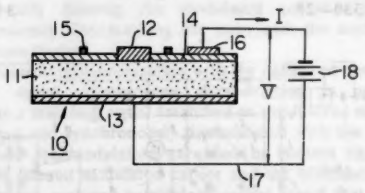


A laser device with a laser rod positioned within an optical resonant cavity. The composition of the rod is chosen to have a coefficient of linear expansion α_l and a thermal coefficient of the index of refraction α_n such that the average of the optical path lengths for radial and tangential polarization is equal to the optical path lengths for a ray through the center of the rod. A mode selecting aperture is positioned at an end of the rod along the axis of the cavity for discriminating against all but the HE_{11} mode. A ⅛ wave Faraday rotator is also positioned along the axis of the cavity. The result is a laser device in which the thermal gradient effects are substantially eliminated.

3,629,724
SEMICONDUCTOR OSCILLATING-RESONANCE CIRCUIT DEVICE

Kazumasa Shiga, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed July 7, 1969, Ser. No. 839,154
Claims priority, application Japan, July 19, 1968, 43/51425
Int. Cl. H03b 7/14
U.S. Cl. 331—96 3 Claims



A semiconductor oscillating-resonance circuit device is provided, which comprises a first plate electrode, a substrate disposed on the first electrode and having a negative resistance under a strong electric field, a spiral induction element having an inductance disposed at the opposite side of the substrate to the first plate electrode, an insulating layer disposed between the substrate and the induction element for providing a capacitance between the first electrode and the induction element, a second electrode connected to the one end of the induction element and ohmically contacted with the substrate, electric terminal connected to the other end of the induction element, and a DC power source connected to the first plate electrode and the electric terminal for establishing the strong electric field in the substrate.

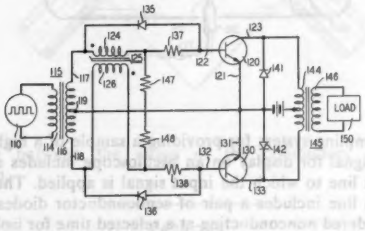
The thus-constructed device generates a high-frequency signal having a frequency determined by the inductance and the capacitance.

3,629,725

DRIVEN INVERTER WITH LOW-IMPEDANCE PATH TO DRAIN STORED CHARGE FROM SWITCHING TRANSISTORS DURING THE APPLICATION OF REVERSE BIAS

Ping Sun Chun, Morris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1969, Ser. No. 888,019
Int. Cl. H03f 3/26; H03k 3/26
U.S. Cl. 331—113 A 6 Claims



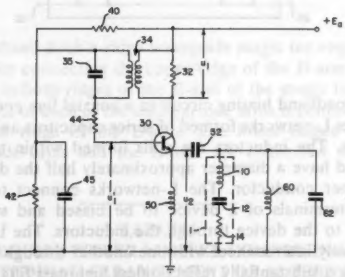
The base drive paths of the two switching transistors in a push-pull type inverter are magnetically coupled by a saturating magnetic core. Until saturation of the core occurs, the base-emitter voltage of the on-going switching transistor is clamped at a sufficiently low value to prohibit turn-on of the transistor. Thus turn-on of the on-going transistor is delayed. Each base drive path includes an impedance in series with the base during conduction to limit stored charge in the transistor base region, as well as a reverse-bias low-impedance discharge path to allow the stored charge in the off-going transistor to dissipate during the delay interval.

3,629,726

OSCILLATOR AND OSCILLATOR CONTROL CIRCUIT

Gabriel Popescu, Queens, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,240
Int. Cl. H03b 5/40
U.S. Cl. 331—116 M 11 Claims



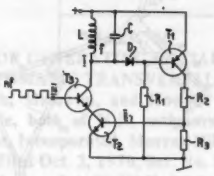
An oscillator circuit adapted particularly for use with transducers for producing energy in the ultrasonic frequency range in which a combination of feedback signals representative of the voltage across the transducer and the current through the transducer are used to more precisely lock the oscillator to the resonant frequency of the load to thereby provide improved power transfer from the oscillator to the transducer. A current control circuit is also provided to control the amount of shock delivered by the transducer.

3,629,727

CIRCUIT FOR SUSTAINING OSCILLATION OF A RESONATOR BY A FREQUENCY ABOVE THE NATURAL FREQUENCY OF SAID RESONATOR

Jean Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines, Francillon S.A., Berne, Switzerland and Bernard Golay S.A., Lausanne, Vand, Switzerland

Filed May 5, 1970, Ser. No. 34,735
Claims priority, application Switzerland, May 20, 1969, 7635/69
Int. Cl. H03b 3/04, 5/12
U.S. Cl. 331—117 R 3 Claims



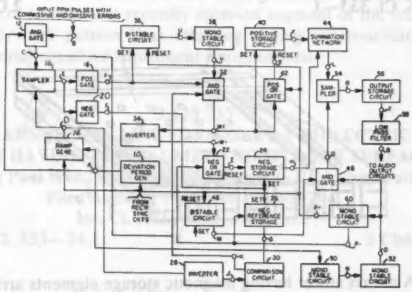
An electronic circuit allowing sustaining oscillation of a resonator by a reference frequency substantially exceeding the natural frequency of the resonator, wherein pulses at reference frequency and natural frequency are applied to the inputs of an AND-gate and the resonator is coupled to the output of the AND-gate for sustaining its oscillation by the output pulses of the AND-gate.

3,629,728

A PULSE SELECTION SYSTEM USING PULSE POSITION TO PULSE AMPLITUDE CONVERSION

Billy W. Whitlow, Orange County, Fla., assignor to Martin-Marietta Corporation, Middle River, Md.

Filed Mar. 31, 1964, Ser. No. 356,147
Int. Cl. H03k 7/00
U.S. Cl. 332—1 5 Claims



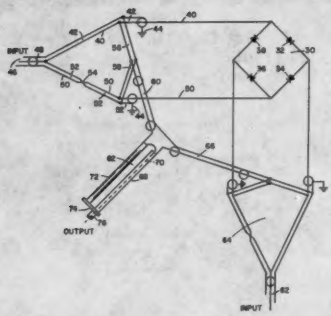
This invention pertains to a pulse selector for demodulating pulse position modulated signals, involving means for converting all incoming pulses received during the first half cycle of a time frame into amplitude modulated pulses of one polarity, and all pulses received during the last half cycle of the time frame to the opposite polarity, such means being used in conjunction with selecting means for selecting from each set of amplitude modulated pulses, the pulse which is closest in amplitude to zero volts. A pulse containing intelligence is thus separated from noise and interference pulses based upon the likelihood that the pulse nearest the center of a given sample period is the intelligence pulse.

3,629,729

HIGH-FREQUENCY DOUBLY BALANCED WIDE WAVEBAND RING-CONNECTED DIODE MODULATOR

John Hessler, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 24, 1970, Ser. No. 49,291
Int. Cl. H01p 3/06; H04b 1/26
U.S. Cl. 332—16 R 3 Claims



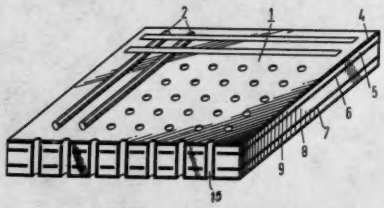
A very wide band high-frequency modulator is disclosed using ring-connected diodes in which the local oscillator and the signal frequency can be very different from each other. The modulator is doubly balanced and uses two wide band phase inverters connected across conjugate diagonals of the ring-connected diodes and a balanced to unbalanced output connection.

3,629,730

CAPACITOR ARRANGEMENT FOR WAVE CONDUCTOR SYSTEMS

Hans-Joerg Penzel, and Hermann Kadow, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 23, 1970, Ser. No. 21,770
Claims priority, application Germany, Apr. 15, 1969, P 19 19 110.7
Int. Cl. H01p 3/02; H03h 7/48
U.S. Cl. 333—1 2 Claims



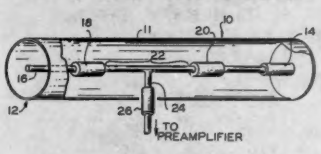
A matrix storer having magnetic storage elements arranged in rows and columns and constructed as wave conductors. The wave conductors are disposed substantially parallel to a base conductor which serves as a common return line for pulses conducted along the drive or reading lines of the storer. A further conducting plane is spaced from the base plane and separated therefrom by a thin insulating layer to form a capacitor which couples the potential of the drive or reading lines to the base plane. Additional layers of conducting planes can be provided to form an additional capacitor for high-frequency coupling to the base plane. The additional conductors are insulated from each other and from the conductors forming the first capacitance, and a plurality of connectors are distributed throughout the surface of the capacitor to directly couple one of the conducting plates forming the second capacitor to the base plane.

3,629,731

SAMPLING SYSTEM

George J. Frye, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed July 12, 1968, Ser. No. 744,491
Int. Cl. H01p 5/12, 3/08; H03k 5/13
U.S. Cl. 333—7 29 Claims



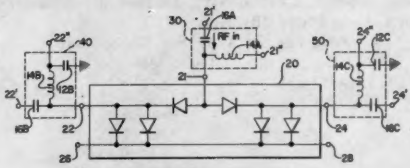
A sampling system for providing a sample of a high-speed input signal for display on an oscilloscope includes a transmission line to which the input signal is applied. The transmission line includes a pair of semiconductor diodes which are rendered nonconducting at a selected time for isolating a section of transmission line therebetween and temporarily storing a sample of the input signal. Output means connected to the transmission line between the diodes couples the sample to a cathode ray tube display means.

3,629,732

BROADBAND BIASING CIRCUIT COOPERATING WITH SWITCH TO ESTABLISH BROADBAND RF FILTER PATH BETWEEN INPUT AND OUTPUT PORTS

Philip E. King, Acton, and Paul C. Finne, Reading, both of Mass., assignors to Alpha Industries, Inc., Newton Upper Falls, Mass.

Filed May 5, 1969, Ser. No. 821,650
Int. Cl. H01p 1/10
U.S. Cl. 333—7 3 Claims



A broadband biasing circuit in a coaxial line configuration includes L-networks formed of series capacitors and shunt inductors. The inductors are coils formed within the coaxial line and have a diameter approximately half the diameter of the inner conductor. The L-networks connect to the RF-signal terminals of a device to be biased and supply bias signals to the device through the inductors. The L-networks selectively interconnect with one another through the device forming a substantially reflectionless high-pass filter circuit.

3,629,733

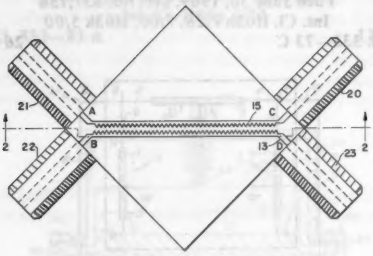
HIGH-DIRECTIVITY MICROSTRIP COUPLER HAVING PERIODICALLY INDENTED CONDUCTORS

Allen F. Podell, Cambridge, Mass., assignor to Adams-Russell Co., Inc., Waltham, Mass.

Filed June 8, 1970, Ser. No. 44,217
Int. Cl. H01p 5/14
U.S. Cl. 333—10 7 Claims

A directional coupler employing a microstrip line with a pair of conductors printed on a dielectric block, which has a ground plane adhered to the opposite surface. The inner con-

fronted edges of the pair of conductors are periodically indented with the indentations being staggered so that the



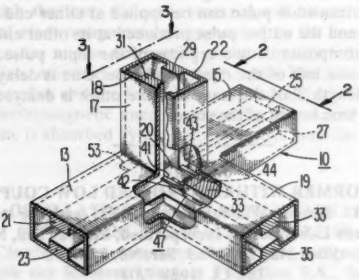
spacing between the edges of the conductors remains uniform.

3,629,734

BROADBAND DOUBLE-RIDGE WAVEGUIDE MAGIC TEE

Wieslaw Wojciech Siekanowicz, and Robert Wayne Paglione, both of Trenton, N.J., assignors to RCA Corporation

Filed July 15, 1970, Ser. No. 55,057
Int. Cl. H01p 5/12
U.S. Cl. 333—11 6 Claims



A broadband double-ridge waveguide magic tee employing two rods for connecting the upper ridge of the H-arm of the magic tee to both ridges of the E-arm of the magic tee. The upper ridges of each of the colinear side arms is connected to the nearest ridge of the E-arm. The lower ridges of the colinear side arms and the H-arm are connected to each other.

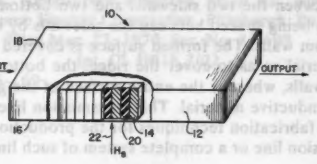
3,629,735

WAVEGUIDE POWER LIMITER COMPRISING A LONGITUDINAL ARRANGEMENT OF ALTERNATE FERRITE RODS AND DIELECTRIC SPACERS

John L. Carter, Oakhurst, and Joseph W. McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 1, 1969, Ser. No. 862,734
Int. Cl. H03g 11/04; H01p 1/32
U.S. Cl. 333—17 8 Claims

A microwave power limiter having a plurality of spaced, uniformly dimensioned ferrite rods aligned along and adjacent to the side or narrow wall of a rectangular waveguide propagating the energy to be limited. The ferrite rods are separated by dielectric rods which are identical in configuration to the ferrite rods and are characterized by the same dielectric constant. A magnetic bias is applied parallel to the side or narrow waveguide wall in the vicinity of the laminated



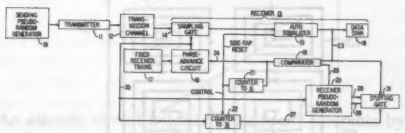
ferrite and dielectric rod structure to provide a condition of subsidiary resonance.

3,629,736

SYSTEM FOR GENERATING INITIAL SETTINGS FOR AN AUTOMATIC TRANSVERSAL EQUALIZER

Donald Hirsch, Matawan, and Howard Clarence Meadors, Jr., Wayside, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 2, 1970, Ser. No. 77,657
Int. Cl. H04b 3/04
U.S. Cl. 333—18 6 Claims



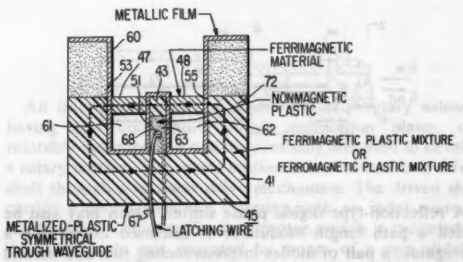
In a transversal equalizer with tap multipliers whose settings are automatically controlled by the mean-square error difference between a predetermined transmitted work pattern and a receiver-generated identical pattern, an improvement in startup performance in the presence of high-level distortion is achieved by making incremental phase changes in the receiver timing on each failure of comparison between the two patterns. Further improvement is effected by resetting all tap multipliers, except a reference multiplier, to the zero condition when such comparison failures persist. Upon repeated failure for a predetermined number of occurrences the state of the receiver word generator is altered to conform to the most recently received segment of the transmitted work pattern thus attaining timing synchronization and initial equalizer adjustment simultaneously.

3,629,737

TRANSMISSION LINE FORMED BY A DIELECTRIC BODY HAVING A METALLIZED NONPLANAR SURFACE

Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation

Filed Aug. 18, 1969, Ser. No. 850,862
Int. Cl. H01p 1/32, 3/12, 5/02
U.S. Cl. 333—24.1 5 Claims



A transmission line made of a block of dielectric material having a metallized formed surface which determines the

electric and magnetic field characteristics of an electromagnetic wave applied thereto. The formed surface of the block of dielectric material is such as to define two sidewalls, a ridge between the two sidewalls and two bottom walls with the ridge being spaced between the sidewalls by the width of the bottom walls. The formed surface is covered by conductive material so as to cover the ridge, the bottom walls and the sidewalls, whereby the entire surface of the groove comprises conductive material. This transmission line lends itself to batch fabrication techniques for the production of a single transmission line or a complete system of such lines.

3,629,738

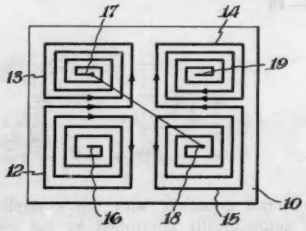
MICROSTRIP DELAY LINE

George A. Senf, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of application Ser. No. 730,026, May 17, 1968. This application June 1, 1970, Ser. No. 42,414

Int. Cl. H03b *7/30*

U.S. Cl. 333—30 **6 Claims**



An effective ground plane pattern adjusted for minimum phase distortion is provided for a microstrip delay line by varying the distances between shorting bars which interconnect conductive strips spaced apart so as to encompass the entire ground plane area.

3,629,739

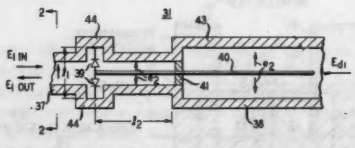
REFLECTION-TYPE DIGITAL PHASE SHIFTER

Mark R. Barber, Summit, and Reed E. Fisher, Parsippany-Troy Hills Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Original application Feb. 23, 1966, Ser. No. 529,453, now Patent No. 3,460,122, dated Aug. 5, 1969. Divided and this application Aug. 4, 1969, Ser. No. 858,229

Int. Cl. H03h *7/18*

U.S. Cl. 333—31 **9 Claims**



A reflection-type digital phase shifter, which may also be called a path length modulator is disclosed comprising a waveguide, a pair of diodes interconnecting first and second opposite walls of the waveguide, and a center conductor of a coaxial cable extending through a third wall of the waveguide to bias the diodes.

3,629,740

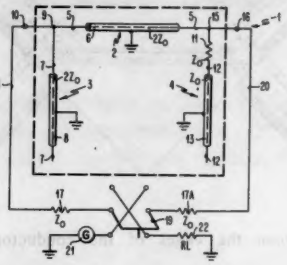
TRANSMISSION LINE FILTER CIRCUIT

John F. Merrill, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,758

Int. Cl. H03h *7/28, 7/00;* **H03k** *5/00*

U.S. Cl. 333—73 C **26 Claims**



A filter circuit stage for pulse shaping having a main shield-grounded transmission line having a characteristic impedance $2Z_o$ and a time length T terminated at both ends with legs of the same $2Z_o$ impedance and same characteristic time length T. The first leg comprises an open-circuited shield-grounded stub of $2Z_o$ impedance, and the other leg comprises a resistor Z_o impedance connected at one end to the main line and at the other end to an open-circuit shield-grounded transmission line stub of Z_o impedance. The filter is only required to be connected to a matching impedance of Z_o at the juncture of the first leg and the main transmission line. The input transition pulse can be applied at either end of the main line and the output pulse produced at its other end is an ultimate composite of two replicas of the input pulse. Each replica is one-half of the input amplitude. One is delayed by the time length T of the stage and the other is delayed by 3 times the time length of the stage.

3,629,741

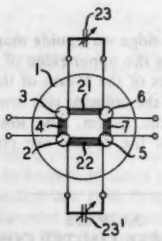
TRANSFORMER WITH CONTROLLED LOW COUPLING

William L. Brune, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1969, Ser. No. 828,851

Int. Cl. H03h *7/08*

U.S. Cl. 333—78 **4 Claims**



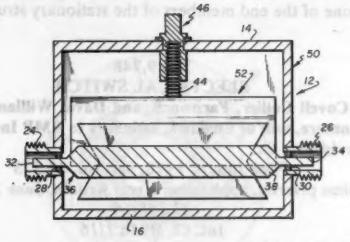
A transformer having controlled low coupling between its windings. The transformer comprises a unitary core of ferromagnetic material, such as ferrite or carbonyl iron, fabricated in one piece with first and second pairs of apertures formed therein. A primary winding is threaded through the first pair of apertures and a secondary winding is threaded through the second pair of apertures. The coupling between these windings is controlled by means including a portion of the unitary core which is located between the two pairs of apertures. This provides completely closed magnetic paths in the core material for all the magnetic flux produced by driving either the primary or secondary windings.

3,629,742

VARIABLE COAXIAL ATTENUATOR

Ronald Davo, Succasunna, N.J., assignor to Meca Electronics, Inc., Denville, N.J.

Filed Mar. 16, 1970, Ser. No. 19,908
Int. Cl. H01p 1/22
U.S. Cl. 333—81 A 12 Claims



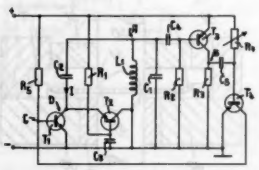
A variable coaxial attenuator comprising a conductive casing having first input means and first output means for connecting the casing to the outer conductor of a coaxial transmission line, an inner conductive member disposed in the casing and spaced from the walls of the casing, second input means and second output means for connecting the inner conductor of a coaxial transmission line to the inner conductive member, lossy dielectric material disposed in the walls of the casing, and a pair of conductive plate members movably supported for movement between a nonobstructing position in which the lossy dielectric material will be entirely in the field of electromagnetic energy carried by the coaxial transmission line and an obstructing position in which the conductive plate members are disposed between the inner conductive member and the lossy dielectric material so that none of the electromagnetic energy carried by the coaxial transmission line is absorbed by the lossy dielectric material.

3,629,743

OSCILLATING SYSTEM WITH MEANS FOR FREQUENCY VARIATION THEREOF

Jean-Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines Francillon S.A., Saint-Imier and Bernard Golay S.A., Lausanne, Switzerland

Filed Dec. 19, 1969, Ser. No. 886,448
Claims priority, application Switzerland, Dec. 27, 1968, 19285/68
Int. Cl. H03j 3/20
U.S. Cl. 334—89 5 Claims



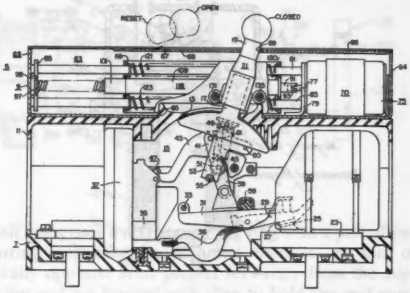
A device for varying the resonance frequency of an oscillating system, comprising a condenser coupled to said system by means of an electronic two-way switch, open and closed condition of this switch being controllable in such a way that the apparent value of the condenser and thus the resonance frequency of said system may be shifted in accordance with the relation between the duration of closed and open condition of the switch.

3,629,744

MOTOR-OPERATED CIRCUIT BREAKER

Alfred E. Maier; Louis N. Ricci, both of Beaver Falls, and Charles E. Haugh, New Brighton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1970, Ser. No. 23,199
Int. Cl. H01h 3/02
U.S. Cl. 335—69 9 Claims



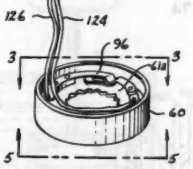
An electric circuit breaker is manually operable by means of a front accessible handle and electrically operable by means of an improved motor-operating mechanism having resilient handle-operating means for preventing damage to the circuit breaker handle during operation.

3,629,745

INTERRUPTER SWITCH FOR ROTARY SOLENOID

Robert M. Anderson, Xenia, Ohio, assignor to Ledex Inc., Dayton, Ohio

Filed July 7, 1970, Ser. No. 52,855
Int. Cl. H01h 67/06
U.S. Cl. 335—122 10 Claims

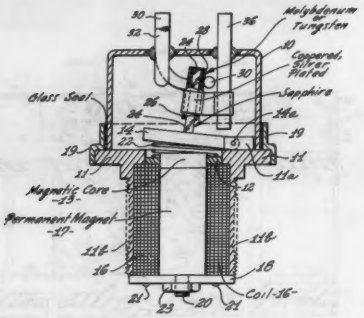


An interrupter switch is assembled in a rotary solenoid having two cooperating rotary conversion plates, one rotatably mounted and one nonrotatably mounted to develop a rotary motion. The rotary motion is transmitted to a driven shaft through a one-way drive mechanism. The driven shaft carries a detent structure coacting with an index plate to locate shaft positions. The interrupter switch is mounted to the index plate and operated by means of a cam slidably mounted in a window through the index plate and driven by a stud affixed to the rotatably mounted rotary conversion plate.

3,629,746
VACUUM RELAY

Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.

Filed May 4, 1970, Ser. No. 34,387
Int. Cl. H01h 9/20
U.S. Cl. 335—170 7 Claims

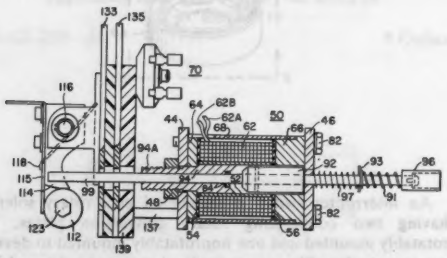


An improved construction for a miniature vacuum relay is provided, whereby the relay is capable of a latching operation. The relay responds to an electric pulse of a first polarity to move from one electrical switching condition to another, and it remains in the second electrical switching position until a second pulse of opposite polarity is applied to the relay, at which time the relay returns to its original switching position. A permanent magnet is included in the magnetic circuit of the relay so that when the armature is moved against the action of the biasing spring of the relay to a particular position, it is retained in that position by the permanent magnet until an opposing magnetic flux is created in the magnetic circuit to nullify the action of the permanent magnet.

3,629,747
ELECTROMAGNETIC TRIP DEVICE FOR CIRCUIT INTERRUPTERS

Joseph D. Findley, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 26, 1970, Ser. No. 22,915
Int. Cl. H01h 9/00
U.S. Cl. 335—174 8 Claims

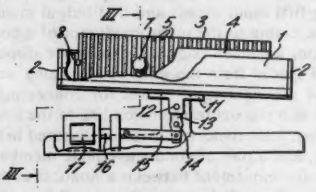


An electromagnetic trip device for a circuit interrupter or circuit breaker comprising an electrically conducting substantially nonmagnetic tube having a relatively large number of conductor turns of an energizing coil wound thereon. A stationary magnetic structure is provided which includes a pair of end members disposed at the opposite ends of the above-mentioned tube and a central leg member which extends axially inside of said tube. A magnetic armature or plunger is disposed to move reciprocally between an engaged position with respect to the central leg member of the associated stationary magnetic structure and another position which is spaced axially away from said central leg member. A substantially nonmagnetic tripping rod is provided to move with the associated armature axially through an opening in at least one of the end members of the stationary structure.

3,629,748
ELECTRICAL SWITCH

John Covell Collier, Farnworh, and David William Rickards, Stanmore,both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 4, 1970, Ser. No. 43,523
Claims priority, application Great Britain, June 26, 1969, 32,358/69
Int. Cl. H01h 1/16
U.S. Cl. 335—196 11 Claims

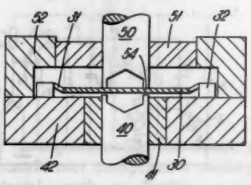


An electrical scanning switch including a common contact, a plurality of individual contacts, and a member rollable over the contacts to provide an electrical connection between the common contact and each of the individual contacts in succession, the member when rolling over the contacts having no propulsive force applied to it by physical contact with the member.

3,629,749
ELECTROMAGNETIC SWITCH CONSTRUCTION

Harry Stanley Woodhead, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,333
Claims priority, application Great Britain, June 6, 1969, 28,697/69
Int. Cl. H01h 1/06
U.S. Cl. 335—196 6 Claims



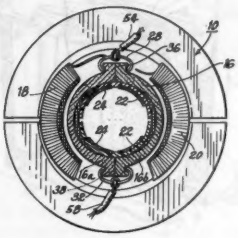
A magnetically operated switch construction which uses as its moving contact-actuating armature, a resilient circular disc-shaped diaphragm. The diaphragm is moved axially to actuate its contacts. The disc has three or more annularly aligned tongues, each having a face end resiliently bearing against an adjacent surface to maintain the diaphragm in its normal condition.

3,629,750

DEFLECTION YOKE

Frank H. Nienaber, Mundelein, Ill., assignor to Television Laboratories Inc., Wauconda, Ill.

Filed May 19, 1970, Ser. No. 38,663
Int. Cl. H01f 7/00
U.S. Cl. 335—210 3 Claims



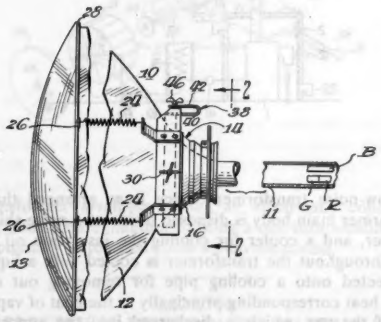
A cathode-ray tube deflection yoke having a ferrite core and carrying horizontal and vertical deflection coils. Ends of the coils and electrical leads are conductively fastened to a number of spaced electrically conductive means which are connected directly to the ferrite core. The direct connection to the ferrite core obviates the need for an external insulative terminal board.

3,629,751

DEFLECTION YOKE MOUNTING

Dominick A. Massa, Arlington Heights, Ill., assignor to Warwick Electronics Inc.

Filed Apr. 16, 1969, Ser. No. 816,489
Int. Cl. H01f 7/00
U.S. Cl. 335—210 3 Claims



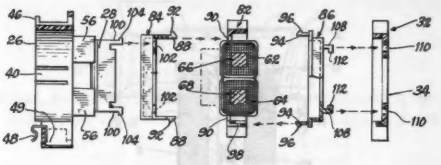
A mounting assembly for the deflection yoke of a three-gun, color cathode-ray tube including a carrier for the deflection yoke, a support mounted on the cathode-ray tube and means mounting the carrier on the support for longitudinal and pivotal movement. The position of the deflection yoke with respect to the tube is adjusted in three steps, (1) rotate the yoke about the tube neck to square the picture with the face of the tube, (2) position the carrier and yoke longitudinally on the tube neck for color purity, and (3) tilt the carrier and yoke to equalize scan width for all colors.

3,629,752

CONVERGENCE UNIT FOR COLOR TELEVISION PICTURE TUBE

Albert M. Anthony, Conneaut, Ohio, assignor to Tractor, Inc., Austin, Tex.

Filed Feb. 4, 1970, Ser. No. 8,485
Int. Cl. H01f 1/00
U.S. Cl. 335—212 15 Claims



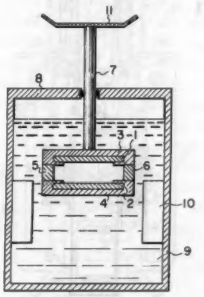
The unit comprises a rear supporting ring with a pair of purity-adjusting ring magnets mounted thereon. A pair of diametrically opposite arms project forwardly from the supporting ring and are formed with clips to hold two rod magnets, one for blue lateral and the other for radial convergence adjustment. The arms are formed with lugs which are slidably received in slots formed in the housings of diametrically opposite dynamic convergence units. The front sides of the housings are formed with lugs slidably received in slots formed in a front supporting member having a central aperture. A split ring clamp is mounted around arcuate clamping elements on the housings.

3,629,753

MAGNETIC FLOATING DEVICE USING HARD SUPERCONDUCTOR

Ushio Kawabe; Mitsuhiro Kudo; Masato Ishibashi, and Toshio Doi, all of Tokyo-to, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,240
Claims priority, application Japan, July 23, 1969, 44/57703
Int. Cl. H01f 7/22
U.S. Cl. 335—216 12 Claims



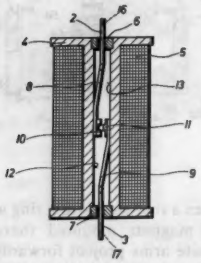
A magnetic floating device formed by a plurality of spaced parallel plates made of a nonhomogeneous hard superconductor maintained by cooling means in a superconductive state and subjected to a magnetic field having a gradient in a direction perpendicular to said plates, whereby the magnetic field between the parallel plates is very weak as compared to the applied magnetic field strength.

3,629,754

MAGNETICALLY ACTUATED COUPLING

Dieter Sobottka, Jever, I. O.; and Dieter Folkens, Wilhelmshaven, both of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Mar. 24, 1970, Ser. No. 22,185
Int. Cl. H01f 7/08
U.S. Cl. 335—253 11 Claims



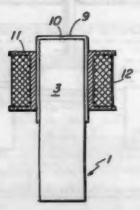
A magnetically actuated coupling for transmitting linear forces and composed of a pair of coupling elements arranged in a magnetic field, which is preferably produced by an electromagnet having a hollow core in which the coupling elements are arranged. The coupling elements are constructed of a magnetizable material, so that they will be drawn together at the axis of the core of the electromagnet when power is provided to the coil of the electromagnet, and released when the power to the electromagnet is terminated. At least one of the coupling elements is resiliently mounted, so that it will move out of contact with the other element when the electromagnetic field collapses.

3,629,755

HAMMER ACTUATOR CONSTRUCTION FOR HIGH-SPEED PRINTERS

Frank H. Schaller, Needham Heights, Mass., assignor to Data Printer Corporation, Cambridge, Mass.

Filed Sept. 8, 1970, Ser. No. 70,268
Int. Cl. H01f 7/08
U.S. Cl. 335—271 3 Claims



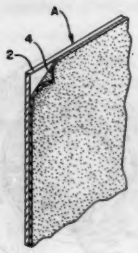
A print hammer actuator for high-speed printers comprising a ferromagnetic core, an armature pivoted to the core, a coil on the core, and a nonmagnetic spacer comprising a strip of flexible insulating material held on the core in position to be struck by the armature when the coil is energized.

3,629,756

THIN SHEET MAGNET

Herman Holtz, 62 Wiesbaden Postfach 167 Postscheckkonto, Frankfurt, Germany

Filed Mar. 23, 1970, Ser. No. 21,888
Int. Cl. H01f 7/20
U.S. Cl. 335—285 5 Claims



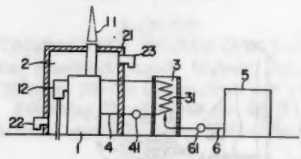
A thin sheet magnet comprised of a thin soft iron foil base with a magnetized barium-ferrite dispersion on one or both sides for use as a wall covering to provide direct mounting means for pictures and the like containing a thin foil backing or as an intermediary between a wall and a picture or the like.

3,629,757

LOW-NOISE TRANSFORMER DEVICE

Hideo Katayama, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Dec. 7, 1970, Ser. No. 95,793
Claims priority, application Japan, Dec. 11, 1969, 44/99688
Int. Cl. H01f 27/08
U.S. Cl. 336—55 2 Claims



A low-noise transformer device is so arranged that the transformer main body is disposed inside of a noise-shielding chamber, and a cooler for cooling the insulation oil circulated throughout the transformer is cooled with a liquefied gas ejected onto a cooling pipe for removing out of the cooler heat corresponding principally to the heat of vaporization of the gas, which is discharged into the atmospheric without being recovered.

3,629,758

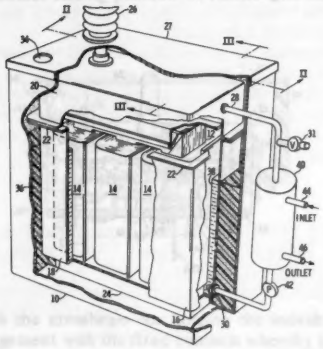
TRANSFORMER USING NONCOMBUSTIBLE FLUID DIELECTRIC FOR COOLING

Henry A. Pearce, Jr., Stoneboro, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1969, Ser. No. 866,301
Int. Cl. H01f 27/10
U.S. Cl. 336—57 10 Claims

A fluid-cooled transformer having an outer casing of metal and an inner casing of electrical insulating material. The

space between the outer and inner casings being substantially filled with solid or cellular insulating material. The inner casing has therein a core-coil assembly with fluid dielectric



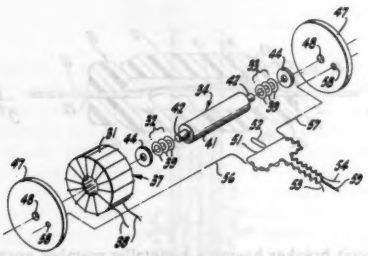
material filling the inner casing to a predetermined height. Bushings extend through the outer and inner casings for making necessary electrical connections to the coil.

3,629,759

COUPLING TRANSFORMER ASSEMBLY

Ellwood S. Douglas, Orinda, and Wallace W. Wahlgren, Oakland, both of Calif., assignors to The Rucker Company, Oakland, Calif.

Filed May 20, 1970, Ser. No. 38,966
Int. Cl. H01f *15/02*
U.S. Cl. 336—82 **8 Claims**



Transformer assembly having an electrically conductive casing and spindle member forming a one-turn winding linking a plurality of toroidal cores within the casing.

3,629,760

ELECTRICAL DEVICE CASING MATERIALS

George P. Seitanakis, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Aug. 11, 1969, Ser. No. 849,610
Int. Cl. H01f *27/02*; C22c *39/24*
U.S. Cl. 336—90 **2 Claims**

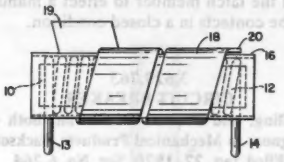
An electrical device; e.g., a transformer, with a fluctuating magnetic field, contained within a casing comprised of steel which has a resistivity in excess of about 65 microhm-cm. at room temperature and a permeability of less than about 1.3 at 200 oersteds after a cold reduction of up to 65 percent. The steel consists essentially of 0.12–0.25% C. 14–15.5% Mn, up to 0.5% Si, 16.5–18.0% Cr, 1.00–1.75% Ni, 0.32–0.40% N, balance Fe and incidental impurities.

3,629,761

BROADBAND HIGH-FREQUENCY TRANSFORMER

Kenneth P. Lundgren, Arlington Hts., and Rolf E. Kowalewski, Palatine, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 1, 1970, Ser. No. 33,778
Int. Cl. H01f *27/28*
U.S. Cl. 336—192 **6 Claims**



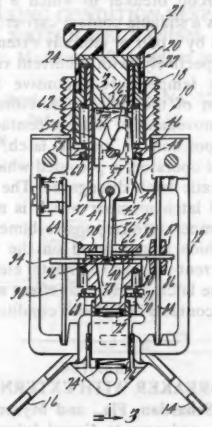
Transformer for use in the 25- to 50-megahertz frequency band for coupling from a 50-ohm source impedance to the low-input impedance of a transistor power amplifier. The transformer includes a single-layer primary winding on a ferrite rod core, with a wide-strip secondary winding about the primary winding. The primary winding may have 15 turns and the secondary winding two turns, with the secondary winding covering substantially the entire outer surface of the primary winding. The frequency of self-resonance of the transformer is above 50 megahertz so that the transformer can be used over a complete octave of frequencies (25 to 50 megahertz). The windings and terminations have low-leakage inductance to hold the LC ratio low for broadband operation.

3,629,762

CIRCUIT BREAKER

Dean D. Walling, Jackson, Mich., assignor to Mechanical Products, Jackson, Mich.

Filed Jan. 21, 1970, Ser. No. 4,672
Int. Cl. H01h *71/16*, *71/22*, *73/30*
U.S. Cl. 337—62 **7 Claims**



An aircraft circuit breaker in which a push-pull manual operator controls a slidable contact carrier. The contact carrier is controlled by a pair of laterally extending slides which are engaged, respectively, with a current-responsive bimetal

and an ambient temperature-responsive bimetal. Relative lateral movement of the slides effects disengagement of a latch to permit movement of slidable contact carrier into the contact's open position. A manual latch, operated by the push-pull manual operation, is provided which self-disengages when the automatic latch disengages. The manual latch includes a manual latch member which is mounted independently of the temperature-responsive bimetal and a manual latch surface which is supported on the housing independently of the current-responsive bimetal element which is engageable with the latch member to effect a manual latch for maintaining the contacts in a closed condition.

3,629,763

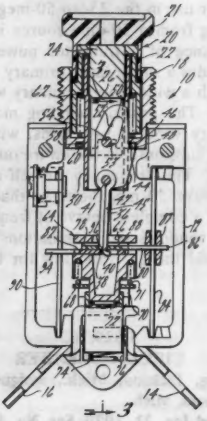
CIRCUIT BREAKER

Dean D. Walling, and Preston D. Rowan, both of Jackson, Mich., assignors to Mechanical Products, Jackson, Mich.

Filed Jan. 27, 1970, Ser. No. 6,264

Int. Cl. H01h *71/16, 71/22, 73/30*

U.S. Cl. 337—66 **4 Claims**



An aircraft circuit breaker in which a push-pull manual operator controls a slidable contact carrier. The contact carrier is controlled by a pair of laterally extending slides which are engaged, respectively, with a current responsive bimetal and an ambient temperature-responsive bimetal. Relative lateral movement of the slides effects disengagement of a latch to permit movement of slidable contact carrier into the contact's open position. A manual latch, operated by the push-pull manual operator, is provided which self-disengages when the automatic latch disengages. The manual latch includes a manual latch member which is mounted independently of the temperature-responsive bimetal and a manual latch surface which is supported on the housing independently of the current-responsive bimetal element which is engageable with the latch member to effect a manual latch for maintaining the contacts in a closed condition.

3,629,764

CIRCUIT BREAKER WITH EXTERNAL HEATER

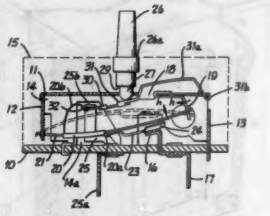
Cleon F. Frey, Sebastian, Fla., and Myron F. Melvin, Indianapolis, Ind., assignors to Comel International Corporation, Bayamon, P.R.

Filed Aug. 19, 1970, Ser. No. 65,100

Int. Cl. H01h *61/00*

U.S. Cl. 337—91 **1 Claim**

The invention is embodied in an overload circuit breaker or protective switch of the type in which a member responsive to an electrical overload opens the circuit through the switch by latching open the switch contacts. A resetting member, when actuated, serves to reclose the switch contacts. The circuit breaker, however, is characterized by a set of auxiliary or secondary switch contacts connected electrically in series with the primary circuit breaker contacts. The movable contact arm or blade carrying the movable auxiliary contact is segmented so that the contact it carries can be



electrically connected to an electric heater wrapped about the thermally responsive operator for the main switch contacts and the arm can, nevertheless, be supported by the electrically conductive housing or chassis, as can the operator for the main switch, without adversely affecting the trip-free reset operation of the breaker.

3,629,765

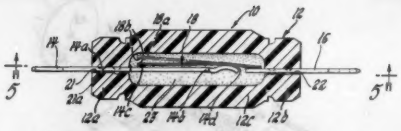
CIRCUIT BREAKER

Richard J. Hanson, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1970, Ser. No. 38,336

Int. Cl. H01h *37/54, 61/013, 61/04*

U.S. Cl. 337—103 **4 Claims**



A circuit breaker having a bimetallic member normally in a circuit closed position in which it engages a stationary terminal to provide a conductive path therebetween, but which is movable toward a circuit open position when heated in response to an electric current in excess of a predetermined magnitude being passed therethrough. The circuit breaker also includes a resistance heater in the form of a printed circuit bonded to the bimetallic member and which is in a parallel circuit with the bimetallic member. When the bimetallic member is moved toward its circuit open position the current flows through the resistance heater to maintain the bimetallic member in a heated condition and in its circuit open position.

3,629,766

FUSIBLE LINK CIRCUIT PROTECTIVE DEVICE

Robert R. Gould, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

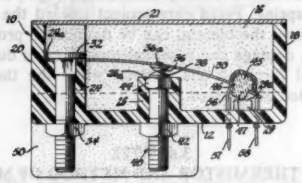
Filed Nov. 10, 1970, Ser. No. 88,389

Int. Cl. H01h *85/36*

U.S. Cl. 337—239 **5 Claims**

A thermally actuated switch having a pair of fixed contacts and a pair of movable contacts, the movable contacts being

located on a pair of electrically conductive resilient contact carrying arms supported in cantilever fashion such that the movable contacts are located intermediate the ends of the arms for cooperation with a pair of fixed contacts, and a crossbeam member spring biasing the free ends of the spring arms into contact closing position. A fusible wire link is associated with the crossbeam for holding the movable contacts in engagement with the fixed contacts whereby the wire link fuses when a predetermined electric current is passed therethrough effecting snap-action release of the spring arms in unison to simultaneously open the paired contacts and electrically disconnect the line conductors of an electrical appliance from a power source.

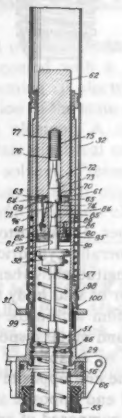


3,629,767

CIRCUIT INTERRUPTER WITH DAMPER BODY TO REDUCE SPEED OF MOVING TERMINAL

Edwin W. Schmunk, Park Ridge, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,551
Int. Cl. H01h *85/02, 85/36, 85/42*
U.S. Cl. 337—275 **15 Claims**



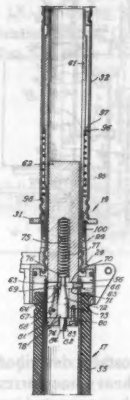
After initial arc drawing movement the rodlike terminal of high voltage alternating current power fuse driven by a spring and gas pressure has its speed reduced by encountering a damper body which is normally latched in a stationary position until it is unlatched on impact by the terminal. Some of the kinetic energy of the moving terminal is dissipated by deforming metallic coupling parts and additional kinetic energy is absorbed in accelerating the damper body. A cross slide latch and a latch lever are employed to hold the damper body stationary in a fuse housing for release on impact by the terminal.

3,629,768

CIRCUIT INTERRUPTER WITH DAMPER BODY TO REDUCE SPEED OF MOVING TERMINAL HAVING A CROSS SLIDE LATCH

Henry W. Scherer, Niles, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,552
Int. Cl. H01h *85/02, 85/36, 85/42*
U.S. Cl. 337—275 **6 Claims**



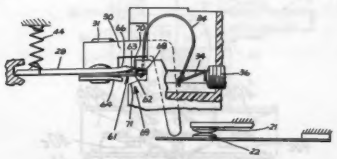
After initial arc drawing movement the rodlike terminal of a high-voltage alternating-current power fuse driven by a spring and gas pressure has its speed reduced by encountering a damper body which is normally latched in a stationary position until it is unlatched on impact by the terminal. A cross-slide latch is employed to hold the damper body stationary in a fuse housing for release on impact by the terminal.

3,629,769

QUIET OPERATING CONDITION RESPONSIVE SNAP SWITCH MECHANISM

John L. Slonneger, Morrison, Ill., assignor to General Electric Company

Filed Sept. 14, 1970, Ser. No. 72,072
Int. Cl. H01h *37/36*
U.S. Cl. 337—318 **8 Claims**



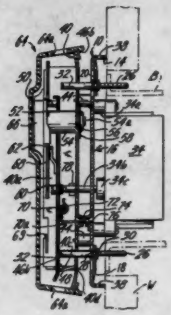
A condition responsive snap switch mechanism includes a pair of contacts and a pivoted contact operator for operating the contacts. Spaced-apart fixed stops are provided for limiting movement of the operator. A thin, flexible damping arm is firmly connected to the contact operator and extends between the stops for yieldingly engaging one of the stops upon operation of the contacts.

3,629,770

THERMOSTAT WITH STABLE SWITCH MOUNT

Jean R. Fortier, South Orange, N.J., and Paul M. Moskowitz, Brooklyn, N.Y., assignors to Federal Pacific Electric Company, Newark, N.J.

Filed Oct. 26, 1970, Ser. No. 83,994
Int. Cl. H01h 37/52
U.S. Cl. 337—333 4 Claims



A line-voltage thermostat is described having a snap-switch proportioned to carry heavy line current to an electric room heater. The snap-switch is mounted on a baseplate which is to be mounted on a wall box. The screws used to mount the baseplate have long shanks so as to be accessible well forward of the baseplate. The mounting screws extend through arched straps which are sheared free of the baseplate except at their ends. This avoids upset of the calibration due to deformation of the baseplate during tightening of the mounting screws, considering mainly the area of the baseplate where the switch is mounted.

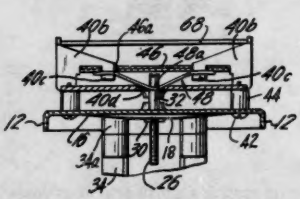
The thermostat has a bimetal held at a hinge point by a single unique spring. Fixed ears project toward the bimetal to limit the extent the bimetal can be depressed, protecting the switch from damage and from calibration error due to excessive manual force on the bimetal when the thermostat is being installed or serviced.

3,629,771

THERMOSTAT WITH STABLE BIMETAL SUPPORT

Jean R. Fortier, South Orange, N.J., and Paul M. Moskowitz, Brooklyn, N.Y., assignors to Federal Pacific Electric Company, Newark, N.J.

Filed Oct. 26, 1970, Ser. No. 83,992
Int. Cl. H01h 37/04
U.S. Cl. 337—372 4 Claims



A line-voltage thermostat is described having a snap-switch proportioned to carry heavy line current to an electric room heater. The snap-switch is mounted on a baseplate which is to be mounted on a wall box. The screws used to mount the baseplate have long shanks so as to be accessible well forward of the baseplate. The mounting screws extend through arched straps which are sheared free of the baseplate except at their ends. This avoids upset of the calibration due to deformation of the baseplate during tightening of the mounting screws, considering mainly the area of the baseplate where the switch is mounted.

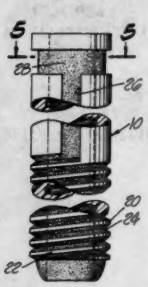
The thermostat has a bimetal held at a hinge point by a single-unique spring. Fixed ears project toward the bimetal to limit the extent the bimetal can be depressed, protecting the switch from damage and from calibration error due to excessive manual force on the bimetal when the thermostat is being installed or serviced.

3,629,772

NOVEL THERMISTOR AND METHOD OF MAKING

Leroy E. Beightol, Los Angeles, Calif., assignor to Solar Laboratories, Inc., Torrance, Calif.

Continuation-in-part of application Ser. No. 790,307, Jan. 10, 1969. This application Feb. 19, 1969, Ser. No. 800,610
Int. Cl. H01c 7/04
U.S. Cl. 338—28 5 Claims



This patent describes a thermistor comprising a plastic body member of a generally cylindrical configuration having an opening passing longitudinally therethrough, a plurality of threads on the exterior of said body in proximity to one end thereof, a thin metal film within the grooves but not on the lands of said threads and metal disposed on the exterior and interior of said body to establish a continuous metal path from the exterior of the end opposite said end having threads to the interior of said end opposite said end having threads, said metal path being composed of an electrically conductive metal having a high-temperature coefficient of resistivity.

3,629,773

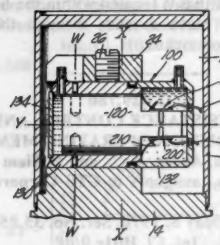
TRANSDUCER

Bernard A. Shoor, Atherton, Calif., assignor to Becton, Dickinson Electronics Company, Pasadena, Calif.

Original application Apr. 10, 1967, Ser. No. 629,496, now Patent No. 3,474,526, dated Oct. 28, 1969. Divided and this application Dec. 27, 1968, Ser. No. 787,529
Int. Cl. G01b 7/16; G01p 15/08
U.S. Cl. 338—43 11 Claims

Stops are provided to limit the displacement of a moving member of a transducer to microscopic distances of less than

about 100 microinches and to an accuracy of ± 15 microinches or better in order to protect delicate strain sensitive elements against breakage. The gap is formed by bringing hard elements into contact with soft, work hardenable,



elements of the assembled unit and then impacting the hard and soft elements together to form the microscopic gaps by virtue of yielding of the soft element and also because of any consequent hardening to resist further yielding.

3,629,774

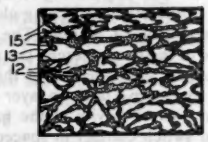
PROGRESSIVELY COLLAPSIBLE VARIABLE RESISTANCE ELEMENT

Nelson A. Crites, Columbus, Ohio, assignor to Scientific Advances, Inc.

Continuation-in-part of application Ser. No. 523,205, Jan. 26, 1966, now abandoned, Continuation-in-part of application Ser. No. 609,372, Jan. 16, 1967, now abandoned. This application Oct. 21, 1968, Ser. No. 772,464

Int. Cl. H01c *13/00*

U.S. Cl. 338—114 **16 Claims**



A resistance element of elastic material has at least an interconnected portion coated with a nonfriable electrically conductive material forming an electrical path that changes its resistance as a function of the state of tension or compression of the resistance element. A conductive material is prepared from particulate electrical conductive material, an elastic binder and a solvent. Pretreatment of an elastic material of elastomer foam prior to application of conductive material produces a useful resistance element.

3,629,775

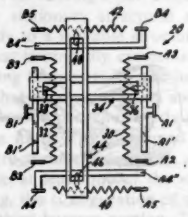
STEREO BALANCE AND FADER POTENTIOMETER

William B. Kindred, Allen Park, Mich., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed June 19, 1970, Ser. No. 47,651

Int. Cl. H01c *5/00*

U.S. Cl. 338—128 **20 Claims**



A voltage and/or impedance control for simultaneously adjusting a number of circuits or electrical components finding useful application in a number of environments, including the provision of a stereophonic balance and fader potentiometer for a four-speaker stereo system, including a common joystick control for individually and concurrently adjusting two pairs of wiper contacts associated with the circuits or electrical components.

3,629,776

SLIDING THIN FILM RESISTANCE FOR MEASURING INSTRUMENTS

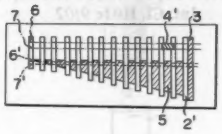
Yutaka Watano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 18, 1968, Ser. No. 768,716

Claims priority, application Japan, Oct. 24, 1967, 42/68037

Int. Cl. H01c *5/06*

U.S. Cl. 338—140 **2 Claims**



A variable resistor is provided wherein a thin metallic film is deposited as by sputtering on a base of insulating material. The thin film consists of at least two layers; the bottom layer being of a base metal selected from the group consisting of manganese, titanium beryllium, tantalum, nickel and chrome, or alloys thereof, and the upper layer being of palladium.

3,629,777

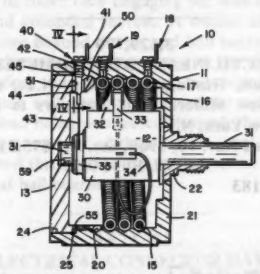
END CLOSURE ARRANGEMENT FOR VARIABLE RESISTOR

Robert J. De Long, Temple City, and Paul F. Gerwitz, West Covina, both of Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Filed Nov. 13, 1970, Ser. No. 89,192

Int. Cl. H01c *5/02*

U.S. Cl. 338—149 **6 Claims**



A potentiometer is provided having a cylindrical housing with an internal helical resistor groove having a helical resistance element disposed in the forward portion thereof. A rotor member having a resistance wiper element is disposed within the housing for contact with resistance element. A cylindrical end closure member having a raised external helical ridge thereon is threaded into the end portion of the helical resistor groove in the housing member. A rotor terminal

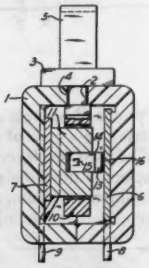
pin is threaded radially into the housing member and through a radial aperture in the closure member to secure the closure member in a predetermined rotational relationship with the housing member and to align a stop shoulder on the closure with the housing member. A plurality of radially extending compression pads are formed on a forwardly facing shoulder of the closure member and engage a rearwardly facing shoulder on the housing member to enable the closure member to be rotated to a precise predetermined relationship with the housing while compensating for manufacturing tolerances in the fabrication of the housing and closure members.

3,629,778

LINEAR MOTION VARIABLE RESISTOR WITH CARBON AND SPRING METAL CONTACTS

Mogens W. Bang, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed Nov. 25, 1970, Ser. No. 92,706
Int. Cl. H01c 9/02
U.S. Cl. 338—183 **8 Claims**



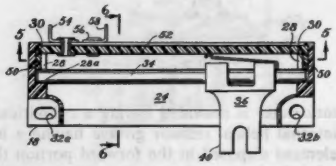
A slide is movable lengthwise between spaced parallel collector and resistance strips. A carbon contact between the strips engages the resistance strip, and a sheet metal spring contact compressed between the carbon contact and the collector strip is connected to the carbon contact. Either of the contacts is connected with the slide for movement lengthwise of the strips. The spring has legs extending in opposite directions along the collector strip in sliding engagement with it and presses the carbon contact against the resistance strip.

3,629,779

RECTILINEAR POTENTIOMETER

Arnold S. Louis, Hastings-on-Hudson, N.Y., and Hans H. Wormser, New Milford, N.J., assignors to Markite Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,311
Int. Cl. H01c 9/02
U.S. Cl. 338—183 **4 Claims**



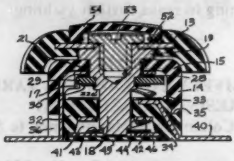
An inexpensive, variable resistance device such as a potentiometer is characterized by a minimum number of parts that include a housing and a cover that is secured thereto without the use of fasteners. The resistance element, the collector and terminal means may be integral with the cover. The wiper element is positioned on a brush block that is suitably mounted on a shaft that is located within the housing. A portion of the brush block extends through the housing for coupling to actuation means.

3,629,780

VARIABLE RESISTANCE CONTROL AND SWITCH WITH COMMON OPERATING MEMBER

Ronald E. Burcham, Arden, N.C., and William L. Keiver, Jr., Cassopolis, Mich., assignors to CTS Corporation, Elkhart, Ind.

Filed May 8, 1970, Ser. No. 35,859
Int. Cl. H01c 9/08
U.S. Cl. 338—198 **17 Claims**



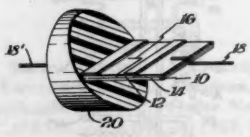
An improved miniature variable resistance control and integral switch is provided for use in hearing aids. The combination is enclosed in a housing having an aperture in one end and an opening in the other end being closed by a base having terminals insert molded therein. The terminals are flush with the surface of the base whereby the resistance path supported on the surface is connected to the terminals by conductive material applied in a uniform layer directly on the surface and the terminals. A cavity in the base contains a switch contactor and switch contact in spaced parallel relationship. In order to actuate the switch and adjust the variable resistance control, a driver rotatably supported in the housing actuates a contactor for wipingly engaging the resistance path and actuates a switch actuator positioned between the switch contactor and the switch contact. The switch actuator and contactor are separated by the base and registered such that the switch is opened and closed when the variable resistance control is set at an extremely low resistance value. Electrical connection between a collector and the contactor is made through a conductive stop plate and wave washer disposed around the driver.

3,629,781

CYLINDRICALLY MOLDED METAL FILM RESISTOR

Walter Helgeland, Nashua, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 4, 1969, Ser. No. 882,184
Int. Cl. H01c 1/02
U.S. Cl. 338—276 **4 Claims**



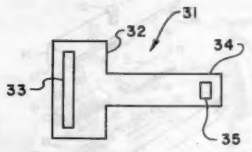
A metal film resistor formed on a flat chip and encapsulated within an insulative compound by a molding process which forms a cylindrical resistor having axial leads.

3,629,782

RESISTOR WITH MEANS FOR DECREASING CURRENT DENSITY

Ravinder J. Sahni, Hopewell Junction, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,437
Int. Cl. H01c 7/00
U.S. Cl. 338—308 10 Claims



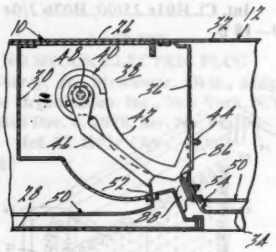
Semiconductor and cermet or thin film resistors employ thin film contacts of aluminum and the like. Failure of these resistors at the positive terminal due to electromigration is virtually eliminated by special designs for decreasing current density at the positive end of the resistor. The width of the resistor at its positive end, and its associated contact is made larger than at the negative end. With semiconductor resistors, a more heavily doped diffusion is used at the positive end.

3,629,783

FLAT WIRING HARNESS ROUTING ARRANGEMENT

Robert W. Holzwarth, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 15, 1969, Ser. No. 857,990
Int. Cl. H01r 35/00
U.S. Cl. 339—4 10 Claims



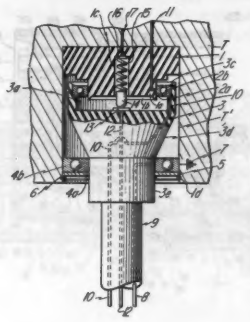
An arrangement for routing a flat, electrical wiring harness from a relatively stationary structural member such as a motor vehicle body to a movable structural member such as a vehicle door that is hingedly connected to the stationary member. The wiring harness is formed having two relatively straight portions that axially are offset and are connected by a third portion disposed perpendicularly to both the straight line portions. The harness is positioned so that it extends from one of the structural members into a hollow, protective housing secured to at least one of the structural members. Within the housing, the configuration of the harness is a coil that includes the third harness portion. The harness extends from the housing to the other of the structural members so that it is capable of conducting electrical energy between these members.

3,629,784

ELECTRIC SWIVEL CONNECTION

James M. Bjorn, 69 18th Ave., and Frederick Marx, Jr., 1510 North "D" St., both of Lake Worth, Fla.

Filed Dec. 19, 1969, Ser. No. 886,644
Int. Cl. H01r 39/46
U.S. Cl. 339—8 P 10 Claims



The electrical swivel Connection is housed in a recess in a power tool handle and has a relatively fixed section of insulating material fitting the inner end of said recess, and has an axially disposed reduced cylindrical outer end, and has an axially disposed bore extending inwardly from the outer end thereof. The rotatable section of insulating material has a larger inner end within the recess of the tool handle, and has an outer cylindrical end of reduced diameter projecting beyond the outer end of the recess. The rotatable section has a cylindrical recess in its inner end receiving the reduced cylindrical outer end of the fixed section. A first ball bearing has its inner race fixedly secured to the cylindrical outer end of the fixed section, and has its outer race fixedly secured to the inner end of the rotatable section. An electrical contact is disposed at the center of the recess in the rotatable section and a second contact is disposed at the inner end of the bore in the fixed section. A spring-biased plug in the bore establishes an electrical circuit between said contacts. A power conductor extends from the second contact through the fixed section into the handle. A second power conductor extends from the inner race through the fixed section into the handle. A second ball bearing has its inner race removably mounted on the outer cylindrical end of the rotatable section, and has its outer race engaging the wall of the recess in the handle and grounded thereto. A washer closes the outer end of the recess beyond the second ball bearing. An electric cable having three leads is connected to the outer end of the rotatable section, one lead being connected through the rotatable section with the inner race of the second ball bearing, another lead being connected through the rotatable section to the first contact of that section, and the third lead being connected through the rotatable section with the outer race of the first ball bearing.

3,629,785

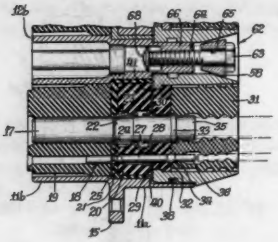
DUAL ELECTRICAL CONNECTOR HAVING SELF-LEVELING SERVICE MECHANISM

Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 19, 1970, Ser. No. 20,928
Int. Cl. H01r 13/62
U.S. Cl. 339—14 R 9 Claims

Electric connector in which a self-leveling mechanism connects independently movable shells with rigidly interconnected shells to move end faces of contact carrying means in the shells into equalized pressure engagement and to lock contact means in position, the mechanism being movable to an unlocked condition to permit insertion, removal and

replacement of contacts. The mechanism preferably includes a pair of yoke members on opposite ends of a fulcrum member and each having opposite end portions engaged with side portions of a pair of independently movable shells, actuating means being connected to a central portion of the fulcrum member which is provided with sides suitably angled to provide locking angles to prevent large axial movements of the two independent shells, when subjected to insertion and removal forces.



3,629,786

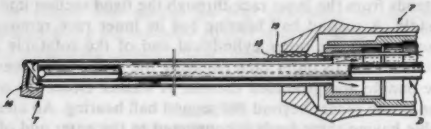
COMBINATION CONNECTOR

Frank L. Reynolds, Monroe; Alfred C. Langer, Brookfield, and Ellsworth Tweedie, Milford, all of Conn., assignors to Frigitronics of Conn., Inc., Shelton, Conn.

Filed Sept. 9, 1970, Ser. No. 70,655

Int. Cl. H01r *3/04*

U.S. Cl. 339—16 R **10 Claims**



There is disclosed a separable connector for both gas and electricity. It comprises a panel-mounted female member having an electrically conductive socket containing a reciprocable spring-loaded valve member. The valve member has a first position in which it shuts off gas flow and makes an electrical connection with the socket, and a second position which permits gas flow and wherein it is electrically isolated from the socket. External electrical connections are made to both the socket and the valve member. A male member includes a probe which may be inserted into the socket to make an electrical connection therewith. The probe carries an actuating member which is electrically isolated from the probe body. Upon insertion of the probe into the socket, the actuating member actuates the valve from its first to its second position and simultaneously makes electrical contact therewith. Electrical connections may be made to the probe body and to the actuating member.

3,629,787

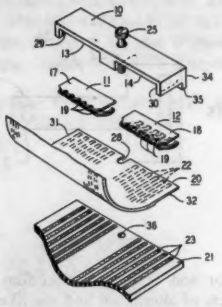
CONNECTOR FOR FLEXIBLE CIRCUITRY

James Wilson, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 19, 1970, Ser. No. 47,820

Int. Cl. H05k *1/04*

U.S. Cl. 339—17 F **5 Claims**



This disclosure describes a connector for joining items of flexible circuitry. A chambered clamping bar houses compression elements which force exposed circuit paths of the flexible circuitry against an element to be joined thereto. Fingered springs and spring-loaded rubber pads are two species of the compression element. The bar may be clipped, screwed, or snap mounted to the circuitry to be joined.

3,629,788

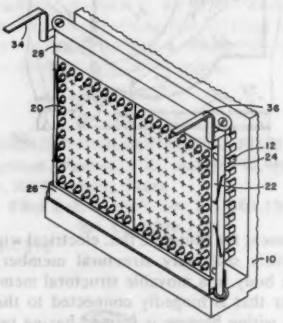
ELECTRICAL INTERCONNECT SYSTEM

Jack B. Hartley, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed July 1, 1970, Ser. No. 51,480

Int. Cl. H01r *25/00;* H02b *2/04*

U.S. Cl. 339—18 B **11 Claims**



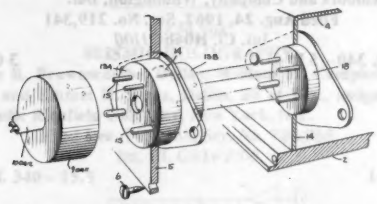
An electrical interconnect system includes a circuit terminal member having a plurality of contact posts extending therefrom. An electrical connector for attaching to said terminal includes first and second plates which are movable to first and second positions thereby engaging or disengaging contact members extending from said plates and said contact posts of said terminal member.

3,629,789

TELEVISION RECEIVER SAFETY INTERLOCK SYSTEM FOR POWER CONNECTIONS

Norman Szeremy, Portsmouth, Va., assignor to General Electric Company

Filed Feb. 2, 1970, Ser. No. 7,555
Int. Cl. H01r *27/00, 13/50*
U.S. Cl. 339—33 8 Claims



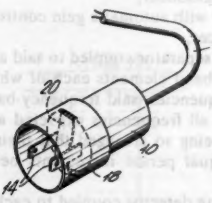
A simplified power interconnection is provided in a television receiver adapted for both battery and AC power operation and having a normally closed cabinet with a removable wall in the cabinet for access to the chassis by skilled service personnel. The power interconnection is fixed in the removable wall and has one connector pattern on the exterior of the wall which mates with disconnectable alternative battery and AC power source plugs outside the cabinet, and has a different connector pattern on the inside of the wall which mates with a single set of power connectors on the chassis inside the cabinet. Because the outside and inside mating patterns are different, unskilled personnel may alternatively energize the chassis through either of the power source plugs only when the removable wall is in position, and may not mate the loose power plugs to the chassis when the wall is removed.

3,629,790

NO SHOCK ELECTRIC PLUG

Frank D. McSherry, Jr., McAlester, Okla., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,304
Int. Cl. H01r *13/44, 13/60*
U.S. Cl. 339—42 4 Claims



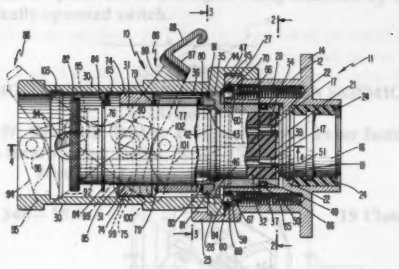
A sliding collar is secured to an electric plug having metal prongs by elastic means whereby the prongs are covered by the collar during insertion in and removal from an electrified socket.

3,629,791

ELECTRICAL CONNECTOR

Richard W. Normann, Otego, N.Y., assignor to The Bendix Corporation

Filed Sept. 30, 1968, Ser. No. 763,568
Int. Cl. H01r *13/62*
U.S. Cl. 339—45 M 15 Claims



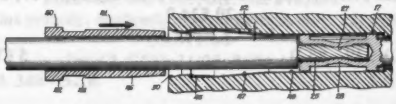
A plug- and socket-type electrical connector having a linearly movable component for quickly engaging and disengaging the mating contacts and for locking and unlocking the connector parts. The connector has novel means for retaining the connector parts in axially aligned relationship after their preliminary assembly by relative transverse movement of said parts, and novel means for selectively securing the linearly movable component in its advanced, connector part mating position and in its retracted, connector part unmated position.

3,629,792

WIRE SEALS

Robert F. Dorrell, Des Plaines, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 28, 1969, Ser. No. 794,546
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 M 5 Claims



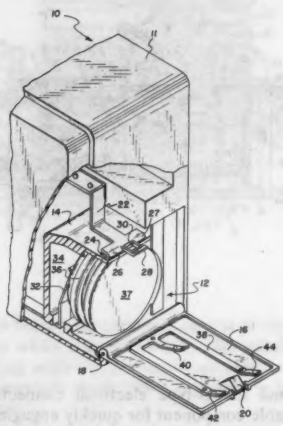
Wire seals in the form of tubular seal members having outer and inner surfaces in pressure sealing engagement with inner surfaces of passages in a dielectric support member and with outer surfaces of the insulating coverings of wires connected to contacts in the passages. Preferably, the pressure sealing engagements are established upon axial movement of the seal members into the passages and interlocking means are provided to retain the seal members in the passages, the seal members however being removable for servicing of wires and contacts. Important features relate to the materials used to permit operation under extremes of environmental conditions.

3,629,793

BATTERY COMPARTMENT

Helmut Ettischer, Ruit, Kreis, Eblingen, and Dietmar Blattner, Schwaikheim, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,662
Claims priority, application Germany, Sept. 25, 1968, K 62 459/57A
Int. Cl. H01r 13/54
U.S. Cl. 339—91 R 4 Claims



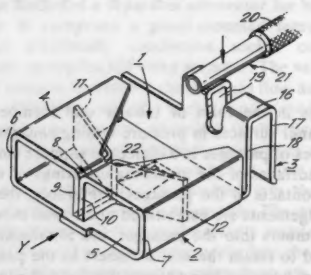
A battery compartment includes a body portion forming a battery receiving cavity and a cover hingably mounted on the body portion to close the cavity. An electrical lead is positioned adjacent the outside of the body portion and forms a pair of bearing surfaces and a resilient finger, the latter of which cooperates with a projection on the cover to latch the cover closed. A current conductor is carried on the inner surface of the cover and includes a first resilient finger which extends into the cavity to contact a pole of a received battery and a pair of resilient fingers electrically connected to the first resilient finger and positioned to contact the bearing surfaces of the lead when the cover is closed to complete the circuit and to provide an opening force to the cover.

3,629,794

FOLDED BOX SPLICE TERMINAL

Fritz Kourimsky, Leutershausen, Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 21, 1970, Ser. No. 30,401
Claims priority, application Germany, May 21, 1969, G 69 20 524.9
Int. Cl. H01r 11/20
U.S. Cl. 339—95 D 5 Claims



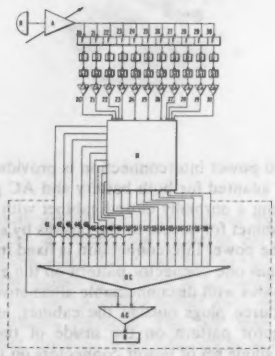
A splice terminal to form an electrical connection between a plurality of electrical conductors at least one of which is clamped by a leaf spring to a side of the terminal, and a housing of insulating material dimensioned to receive the terminal, a wall of the housing including two funnels formed with apertures arranged to lie generally parallel to the abutting portion of the flanges and each to receive an electrical conductor.

3,629,795

UNDERWATER PRESSURE PULSE DETECTOR

Kern M. Bowyer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1962, Ser. No. 219,341
Int. Cl. H04b 11/00
U.S. Cl. 340—5 R 3 Claims



1. An assembly for automatically detecting a pair of pressure pulse sequences emanated from a longitudinal array of spaced explosive elements detonated in the ocean in a manner such as to form two parallel detonation trains travelling in opposite directions relative to each other, the periods of each of the pair of pressure pulse sequences received at any angle from said array varying according to said angle and being the same at a normal angle to said array, the periods of pressure pulse sequences expected to be received at different angles from said array being known, and the sum of the periods of a pair of pressure pulse sequences received at any angle from said array being equal to $2T_o$, where T_o is the period of the pulse sequences emanating in a normal direction from said array, which assembly comprises

a. a pressure transducer;

b. an amplifier with automatic gain control coupled to said pressure transducer;

c. a frequency separator coupled to said amplifier and having *n* frequency-band elements each of which passes a narrow band of frequencies, said frequency-band elements collectively passing all frequencies expected at all angles from said array and being so arranged that their center frequenceies provide equal period increments between successive elements;

d. an integrating detector coupled to each of said frequency-band elements;

e. a triggering device coupled to each integrating detector;

f. a sorting circuit coupled to said triggering devices, said sorting circuit having a plurality of conductors adapted to carry an output signal therefrom when signals are received from at least two different triggering devices, the number of said conductors being equal to $2n$-3, *n* being as defined above, one of said conductors carrying an output signal when

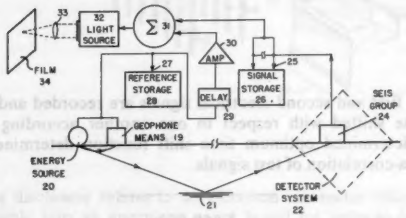
signals have been passed by two frequency-band elements whose center frequencies correspond to periods which add up to one sum, another to a different sum, etc., for all possible sums;

g. a logic circuit coupled to said sorting circuit, said logic circuit being adapted to produce an electrical impulse signal upon reception of (1) an output signal from an output conductor carrying a signal when signals have been passed by two frequency-band elements whose center frequencies correspond to periods which add up to $2T_o$ and (2) signals from no other output conductors.

3,629,796
SEISMIC HOLOGRAPHY

Eugene R. Brownscombe, Dallas; William M. Campbell, Irving, and Emmet D. Riggs, Dallas, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 11, 1968, Ser. No. 782,965
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 **1 Claim**

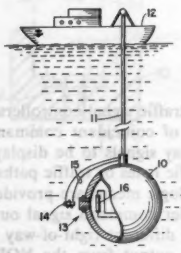


Apparatus and processes for seismic holography with emphasis on field procedures, recording methods, and interpretation processes. Coherent acoustical energy is transmitted into the earth and received with areal detector means. The received signals are mixed with a reference signal so that interference signals are obtained. The interference signals are recorded as spot exposures on photographic film or plates. After arranging the exposures in proper order and scaling, the resulting hologram is illuminated with coherent light. Subsurface structure is indicated by comparing pairs of holograms by observing their images. Holographic images can be combined in several ways to give a difference image which indicates change in subsurface structure.

3,629,797
MAGNETIC SIGNAL TRANSMISSION METHOD AND MEANS

William C. Dillon, Sr., Van Nuys, Calif., assignor to W. C. Dillon & Company, Inc.

Filed Aug. 21, 1969, Ser. No. 852,019
Int. Cl. H04r *17/00*
U.S. Cl. 340—8 R **10 Claims**

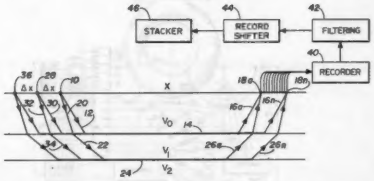


A method and means is provided for transmitting electrical signal information through an iron plate by securing a nonmagnetic insert member in the iron plate and providing a flux carrier means secured within the nonmagnetic insert member. Portions of the flux carrier means are adjacent to opposite surfaces of the iron plate so that by positioning a magnet adjacent to one portion, flux is transmitted through the flux carrier means to the other portion on the other side of the iron plate. By providing a magnetic flux responsive means such as a reed switch on this other side juxtaposed the other portion of the flux carrier means, signal information may be passed through the iron plate by way of the flux carrier means, the presence of the signal being detected by the magnetically operated switch.

3,629,798
METHOD AND SYSTEM FOR REFRACTION SEISMIC EXPLORATION

Donald W. Rockwell, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 8, 1969, Ser. No. 823,011
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 **19 Claims**

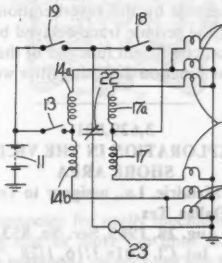


A first seismic disturbance is generated at a reference location and a first set of refraction signals from the seismic disturbance is detected at a plurality of receiver locations spaced a preselected distance from the reference location. A second seismic disturbance is generated at an incremental distance from the reference location, the incremental distance being small compared to the preselected distance. A second set of refraction signals from the second seismic disturbance is received at the receiver locations. The first and second sets of refraction signals are time-shifted relative to one another by a time interval dependent upon the incremental distance and particular refractor layer velocities. The time-shifted signals are then combined in order to enhance selected portions of the signals and to attenuate unwanted or interfering events and noise.

3,629,799
LAMP FAILURE WARNING SYSTEMS

Harold Birtwistle, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 14, 1969, Ser. No. 876,954
Claims priority, application Great Britain, Nov. 22, 1968, 55,519/68
Int. Cl. G08b *21/00*; **B60q** *1/04*
U.S. Cl. 340—52 R **1 Claim**



In a lamp failure warning system first and second windings are provided, each in two parts. A circuit to the first winding

is completed by way of its midpoint, through one part of the winding in one lamp, with another circuit completed through the midpoint, of the other part of the winding and another lamp. Normally the parts of the winding produce a balanced magnetic field, but if a lamp fails the field is unbalanced and a contact is operated to energize a warning lamp. The other winding serves the same function to another pair of lamps.

3,629,800

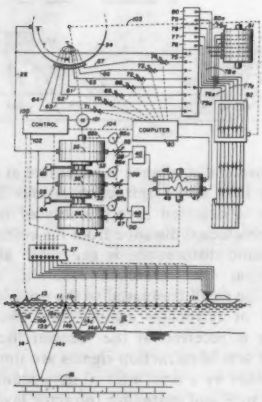
GAPPED DECONVOLUTION REVERBERATION REMOVAL

William A. Schneider, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 559,811, June 23, 1966. This application Sept. 18, 1969, Ser. No. 859,002

Int. Cl. G01v *1/36, 1/28*

U.S. Cl. 340—15.5 **12 Claims**



Disclosed is a method of suppressing reverberatory energy in a seismic trace by subtracting from said trace a trace synthesized by time domain filtering said seismic trace, delayed by time, T, approximately equal to the two-way travel time of seismic energy in the reverberating medium, said filter parameters being defined by the matrix equation $Y_m=(X)^{-1}Z$ where Z is the crosscorrelation coefficient function of a portion of the seismic trace within a truncated data gate and characterized by the reverberation energy, and a similar portion of the seismic trace delayed by a time T; X is the autocorrelation coefficient function of that portion of the trace and Y_m is the function designing filter weights.

3,629,801

SEISMIC EXPLORATION IN THE VICINITY OF A SHORE AREA

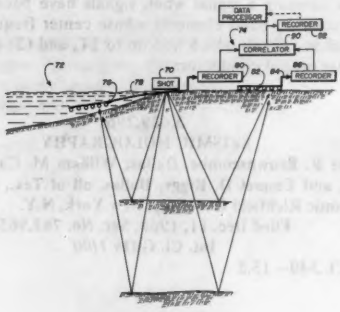
Erwin C. Brede, Metairie, La., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 28, 1969, Ser. No. 853,645

Int. Cl. G01v *1/16, 1/28*

U.S. Cl. 340—15.5 **18 Claims**

First electrical signals are generated in response to detection in shallow water adjacent a shore area of variations in pressure created by the generation of seismic waves. Second electrical signals are generated at the shore area in response to particle velocity variations created by the seismic waves.



The first and second electrical signals are recorded and then phase shifted with respect to one another according to a predetermined optimum time shift function determined by cross-correlation of test signals.

3,629,802

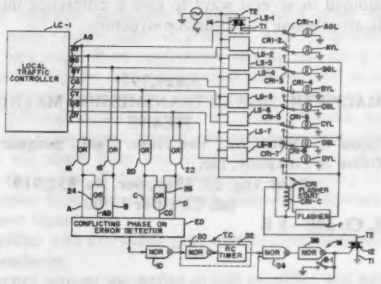
CONFLICTING PHASE ERROR DETECTOR

Larry K. Clark; Peter G. Bartlett, both of Davenport, Iowa, and Frank W. Hill, Moline, Ill., assignors to Gulf & Western Industries, New York, N.Y.

Filed July 18, 1968, Ser. No. 749,560

Int. Cl. G08g *1/097*

U.S. Cl. 340—46 **10 Claims**



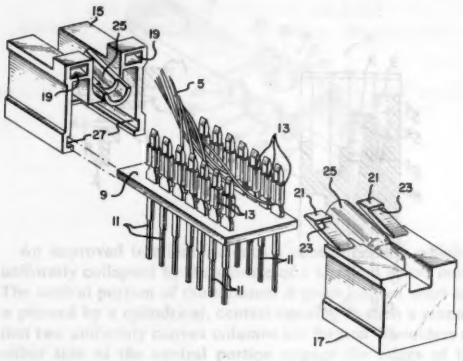
A system for traffic signal controllers is provided to detect the occurrence of coincident command signals that would cause right-of-way signals to be displayed for conflicting or intersecting traffic lanes or traffic paths or courses. For such detection NOR logic means are provided with input connections to controller command signal output lines to produce an output when different right-of-way command signals are coincident. The output from the NOR logic means is employed to disconnect all right-of-way traffic lamps and to connect all caution lamps to an energy source through a flasher.

3,629,803

CONNECTOR FOR POINT-TO-POINT WIRING SYSTEM

Glenn Harlan Gluntz, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,175
Int. Cl. H01r 13/58
U.S. Cl. 339—107 5 Claims



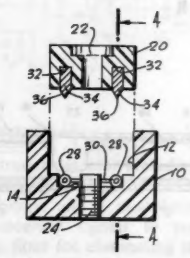
The disclosure relates to an electrical connector which is pluggable into an apertured panel board for point-to-point wiring, the connector including a plurality of wiring posts mounted in an insulating board and having wire clips thereon for retaining wires in contact with each of the posts. The mounting board slidably fits into grooves in a two-piece housing, the housing members being interconnected by means of notched extension in one of the housing members which extends through apertures formed in the other housing member to provide a lock between two housing members with the insulating board and pluggable posts mounted within the housing.

3,629,804

TELEVISION LEAD-IN WIRE CONNECTOR

Donald G. Behymer, 400 N. Los Robles Ave., Pasadena, Calif.

Filed Oct. 8, 1969, Ser. No. 864,587
Int. Cl. H01r 9/08
U.S. Cl. 339—98 8 Claims



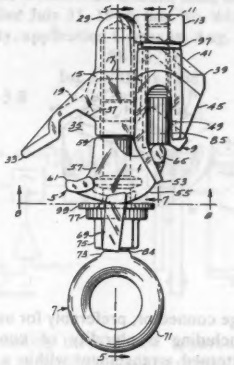
A connector for interconnecting two spaced but abutting ends of separate insulated conductors in such manner as to form the electrical connection without stripping insulation, soldering, twisting wires together or the like.

3,629,805

HOT LINE CLAMP

Vernon E. Peek, Birmingham, Ala., assignor to Anderson Electric Corporation, Leeds, Ala.

Filed Feb. 6, 1969, Ser. No. 797,009
Int. Cl. H01r 7/22
U.S. Cl. 339—109 17 Claims



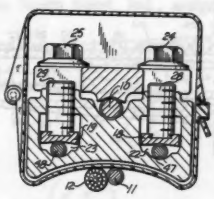
A hot line clamp having a clamp body and a keeper for clamping a main conductor and a tap conductor against the body, with a clamp bolt for drawing the keeper and body together. An auxiliary clamp jaw is interposed between the keeper and the body and has means associated therewith for drawing it toward the body initially to clamp the tap conductor against the body independently of the clamp bolt. The keeper, when drawn toward the body, engages the auxiliary jaw and acts via the latter to apply additional clamping pressure to the tap conductor for high-pressure electrical contact purposes.

3,629,806

MIDSPAN CONNECTOR

Wayne C. Wiechmann, Wheaton, Ill., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Filed Jan. 15, 1970, Ser. No. 2,998
Int. Cl. H01r 7/14
U.S. Cl. 339—116 C 7 Claims

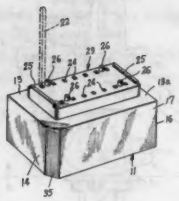


A midspan connector for easily mechanically and electrically connecting one or more tap lines to one phase of a system so that a remaining phase need not be connected but without manipulation assumes a predetermined position separated from the connected phase with the tap conductors in the same plane and parallel to the run conductor.

3,629,807
UNIVERSAL PRINTED CIRCUIT CARD EDGE CONNECTOR

Glenwood A. Fuller, Bloomington, Ill., assignor to General Electric Company

Filed Oct. 21, 1969, Ser. No. 868,033
Int. Cl. H01r 13/46
U.S. Cl. 339—126 8 Claims

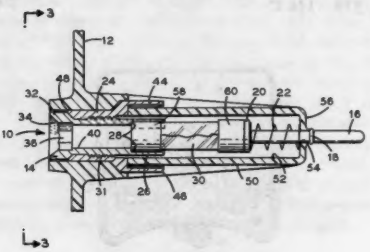


A universal edge connector, preferably for use with printed circuit cards, including a plurality of contacts suitably retained in a patterned arrangement within a housing body formed of nonmetallic material, the housing body having provided on the wiring side thereof a rectangular boss comprising a first independent means for mounting the connector, at each end of the rectangular boss an elevated pad being provided, the two elevated pads combining to comprise a second independent means for mounting the connector, and the rectangular boss being further provided with at least two diametrically opposed standoffs positioned on the rectangular boss inwardly of the aforesaid two elevated pads to enable the connector to be mounted in a third independent manner.

3,629,808
ELECTRICAL CONNECTOR DEVICE

Joseph R. Andreaggi, Short Hills, and George Zenuch, Edison, both of N.J., assignors to Weston Instruments, Inc., Newark, N.J.

Filed Oct. 24, 1969, Ser. No. 869,080
Int. Cl. H01r 9/04, 13/08, 13/68
U.S. Cl. 339—126 R 6 Claims

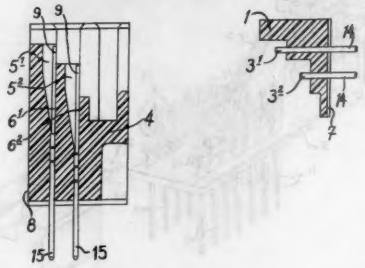


An electrical connector includes a cylindrical housing member having one end portion adapted to receive a fuse member and the other end portion fitted with a connector plug or jack. The end carrying the plug or jack is further provided with a key opening adapted to receive a mating tool key for assembly of the housing member into a panel-mounted receiving member portion of the connector.

3,629,809
ELECTRICAL CONNECTOR PARTICULARLY FOR PRINTED CIRCUITS

Hans-Peter Tillmann, Bruxelles, and Hugo Richard N. De Vuyst, Kasteeldreef, both of Belgium, assignors to Burndy Corporation

Filed Feb. 12, 1970, Ser. No. 10,922
Claims priority, application Belgium, Aug. 8, 1969, 77723
Int. Cl. H05k 1/04
U.S. Cl. 339—176 M 2 Claims

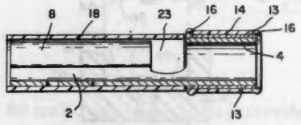


An electrical connector specifically applicable to establishing connections between a flat surface such as a printed circuit board, and contact elements extending at right angles to the plane of the board. The connector includes two halves. One half includes a plurality of rodlike contact elements mounted in parallel, side-by-side relationship, in a housing of insulating material. The ends of the rods extend from opposite sides of the housing. The mating half of the connector includes a plurality of forklike contacts mounted in a housing of insulating material in position for the forks to straddle the extending ends of the rods. Successive rows of the rods are formed with increasing lengths to mate with corresponding forks arranged in successive layers. Separation and mating of the connector halves is achieved by relative movement in a direction substantially perpendicular to the axes of the rods.

3,629,810
PREINSULATED ELECTRICAL TERMINAL

Jean Gorjat, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 11, 1970, Ser. No. 18,437
Claims priority, application Spain, Jan. 8, 1970, 146500
Int. Cl. H01v 13/50; H01r 9/08
U.S. Cl. 339—217 R 1 Claim



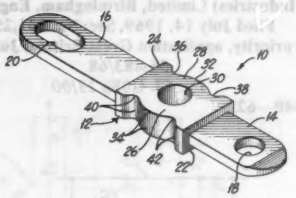
An electrical terminal having a contact portion and a ferrule portion, the ferrule portion being surrounded by an insulating covering, the contact portion being surrounded by an open-ended insulating housing, the insulating covering of the ferrule portion serving to restrain withdrawal of the terminal from the housing.

3,629,811

TERMINAL FOR ASSEMBLY INTO A TERMINAL BLOCK

Norman Deutsch, Morton Grove, Ill., assignor to C. P. Clare & Company, Chicago, Ill.

Filed Apr. 6, 1970, Ser. No. 25,797
Int. Cl. H01r 9/14
U.S. Cl. 339—220 R 7 Claims



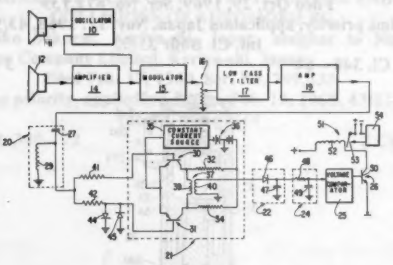
An improved terminal includes a central portion which is uniformly collapsed by the closure of a terminal board mold. The central portion of the terminal is given convex sides and is pierced by a cylindrical, central opening in such a manner that two uniformly convex columns are formed. Shoulders on either side of the central portion engage the edges of the mold. When the mold closes, the convex columns buckle uniformly and provide an extremely close fit between the shoulders and the mold. Flash from the mold is thus prevented from forming on the exposed portion of the terminal.

3,629,812

TURBULENCE-COMPENSATED ULTRASONIC INTRUDER DETECTOR

Ernest J. Amato, Nutley, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed May 15, 1969, Ser. No. 824,823
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 7 Claims



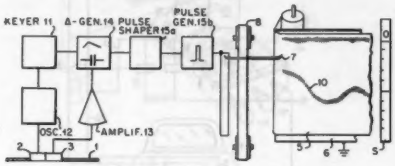
An ultrasonic intruder detector including a transmitter for radiating sound energy into a space, a receiver for receiving reflected sound energy, and a modulator for beating the transmitted and received signals to produce a doppler frequency signal, a filter for eliminating the doppler signals having a frequency below 15 cycles and passing the doppler signals in a higher frequency range, a differential amplifier having first and second amplifier circuits connected to a common input and having their outputs balanced against each other, a pair of oppositely poled diodes connected to one of the amplifier circuits to unbalance these circuits when the amplitude of one of the higher range signals exceeds a predetermined level, and a sensitivity control for adjusting the level of the higher range signals resulting from air turbulence to a value less than the predetermined level so that no output is produced in response to doppler signals resulting turbulence.

3,629,813

METHOD AND APPARATUS FOR ECHO-SOUNDING OF SHORT DISTANCES

Hans Drenkelfort, Kiel-Elmschenhagen, Germany, assignor to Electroacustic Gesellschaft m.b.H., Kiel, Germany

Filed July 31, 1969, Ser. No. 846,415
Claims priority, application Germany, Aug. 3, 1968, P 17 66 881.4
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R 27 Claims



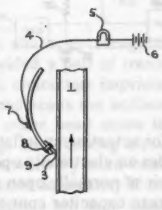
An echo-sounding method and apparatus for measuring short distances, particularly shallow depths, with the aid of a periodically moving indicator member whose indicating action is triggered in dependence upon the time elapsing from the emission moment of the pulse to the reception moment of the echo. For improving the resolution of indication at short distances, the time is expanded by continuously interposing between the echo reception moment and the triggering moment, a delay which increases in proportion to the length of the pulse travel time. For this purpose a triangular wave voltage is generated, the ascending portion of the wave commencing to ascend at the moment of pulse emission and to decline at the moment of echo reception. Concurrently with the triangular wave voltage there is provided an auxiliary voltage, for example of rectangular or trapezoidal wave shape, which has a steep lagging flank coincident with the end of the triangular wave. A trigger pulse derived from the steep lagging flank controls the action of the moving indicator member. Preferably the triangular wave voltage is obtained by supplying a constant current charge to a capacitor commencing with the moment of pulse emission, and changing from charging to constant current discharging of the capacitor under control by the arrival of the echo.

3,629,814

DISK BRAKE ROTOR SCRAPER AND WEAR INDICATOR MEANS

Bruce W. Klein, South Bend, Ind., assignor to The Bendix Corporation

Filed Feb. 17, 1970, Ser. No. 11,987
Int. Cl. F16d 66/02
U.S. Cl. 340—52 A 1 Claim



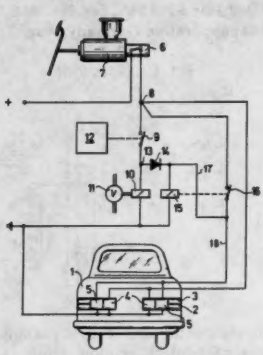
A scraper apparatus for the rotor of a disk brake commonly used for general automotive application which also serves as a scraper wear indicator.

3,629,815

OPTICAL-WARNING SYSTEM FOR VEHICLE BRAKES

Peter Hattwig, Heidelberg, Germany, assignor to Teldix G.m.b.H., Heidelberg, Germany

Filed Mar. 3, 1970, Ser. No. 16,013
Claims priority, application Germany, Mar. 4, 1969, P 19 10 904.7
Int. Cl. B60t 8/10
U.S. Cl. 340—52 B 7 Claims



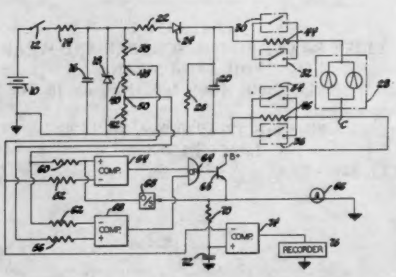
A system for providing an optical-warning indication to persons behind a motor vehicle equipped with a brake control system which prevents locking of the wheels thereof during braking showing that the antilocking control system has been actuated. The optical-warning system provides for two different indications, one when the normal braking action has been initiated and a second when the antilocking control system has been actuated.

3,629,816

AIR CUSHION ACTUATION AND MONITORING CIRCUIT

Arden G. Gillund, Oak Creek, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,381
Int. Cl. B60q 3/04; G08b 19/00
U.S. Cl. 340—61 10 Claims



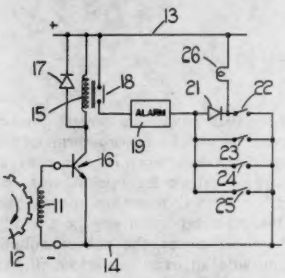
A control circuit for actuating an inflatable air cushion in a motor vehicle includes an electrically operated actuator connected between a pair of normally open acceleration responsive switches. A storage capacitor connected to the switches is discharged through the actuator upon acceleration or deceleration of the vehicle in excess of a predetermined magnitude and duration. Malfunction of either of the acceleration responsive switches or the storage capacitor is detected on a continuous basis by monitoring the voltage at a junction between the actuator and one of the switches and comparing the voltage at the monitored junction with upper and lower reference levels. Both analog and digital embodiments of the invention are disclosed.

3,629,817

WARNING SYSTEMS FOR ROAD VEHICLES

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 14, 1969, Ser. No. 841,254
Claims priority, application Great Britain, July 25, 1968, 35,483/68
Int. Cl. G08b 23/00
U.S. Cl. 340—62 1 Claim



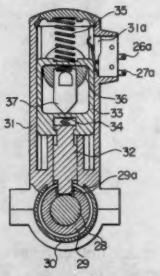
A warning system for a road vehicle has a pair of supply line across which is connected, a circuit including a first switch, a warning device and a second switch. The second switch is operated when a potentially hazardous situation exists in the vehicle, and the first switch is closed when the vehicle is in motion.

3,629,818

ANTITHEFT DEVICE FOR A MOTOR VEHICLE

Teruo Hirama, Yokohama, and Yukio Yamamoto, Ohmiya, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 29, 1969, Ser. No. 872,139
Claims priority, application Japan, Nov. 12, 1968, 43/98040
Int. Cl. B60r 25/02
U.S. Cl. 340—64 3 Claims



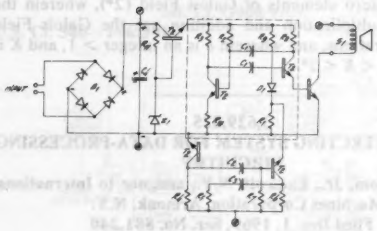
An antitheft device for a motor vehicle, which device is a combination of steering shaft locking means and two switches operated by the motion of the locking means. One of the switches is closed only when the door is opened and the other when the steering shaft is not ready to be locked so that the alarming means, which may actually be an alarming light or buzzer, becomes operative if and only if the door is opened when the locking means is held in the unlocking positions.

3,629,819

VEHICLE ELECTRONIC BACKUP WARNING DEVICE

Edwin R. Peterson, 3109 Bogus Basin Road, Boise, Idaho

Filed Sept. 16, 1969, Ser. No. 858,282
Int. Cl. B60q 1/26
U.S. Cl. 340—70 6 Claims



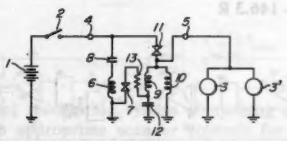
This is an electronic circuit which is useful particularly in establishing for vehicles a backup warning. The circuit is adapted to input voltages ranging from 6 to 36 volts of either polarity and wherein the output voltage can be varied to develop a given desired regulated voltage for actuating a warning device. The circuit comprises basically a bridge section, a capacitor section, a regulator section and speaker and may include oscillator, flip-flop, and amplifier.

3,629,820

SIGNAL DEVICE FOR PREVENTING REAR END COLLISIONS OF AUTOMOBILES

Yasuhiko Sakurai, Kariya-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan

Filed Feb. 17, 1969, Ser. No. 799,633
Claims priority, application Japan, Feb. 19, 1968, 43/12157
Int. Cl. B60q 1/44
U.S. Cl. 340—72 3 Claims



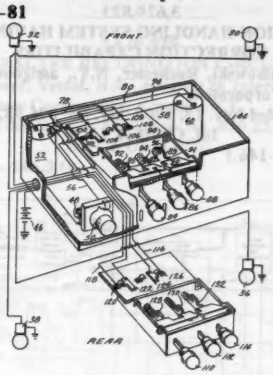
A signal device for preventing rear end collisions of automobiles including a time limit relay having a normally closed contact therein and a flashing relay having another normally closed contact therein, both of which are connected between brake lamps and a brake switch in an automobile so that the operation of the flashing relay may be stopped by means of the normally closed contact in the time limit relay.

3,629,821

VISUAL DISTRESS SIGNALING SYSTEM

Hugh L. Dobbins, 827 Concord Road, Smyrna, Ga.

Filed Sept. 30, 1969, Ser. No. 862,437
Int. Cl. B60q 1/52
U.S. Cl. 340—81 5 Claims



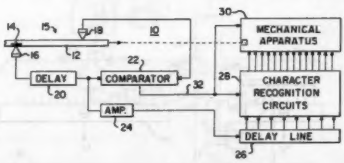
A visual distress signaling system designed especially for use in conjunction with automotive vehicles and including two lamps of different colors viewable from the front of the vehicle, and two lamps of different colors viewable from the back of the vehicle. A manually operable control unit capable of operating the front and rear lights independently, and particularly for flashing the front or rear lights alternately as a primary distress signal and simultaneously flashing only one of the lights (preferably the blue light) at the opposite end of the vehicle indicating to passers-by going in the other direction to disregard for flashing only one of the front and rear lights as an acknowledgement of another primary distress signal, and for flashing only the other lamp of the front and rear lights as a secondary distress signal for guiding a rescue vehicle or indicating that assistance has been provided.

3,629,822

MICR DOUBLE FEED DETECTOR

Donn A. Johnson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 8, 1970, Ser. No. 1,405
Int. Cl. G06r 9/18; G11b 27/00
U.S. Cl. 340—146.3 C 7 Claims



In a magnetic ink character recognition (MICR) reading system, there is provided a pair of transducer reading heads for reading magnetic characters imprinted on one surface of a document. One head scans the surface having the characters on it, and the other head scans the opposite surface. Delaying, amplifying, and filtering circuits are provided to make the signals provided by each head equal in time and magnitude and opposite in polarity if only one document is being read. These signals are then added, and their sum is rectified and applied to a threshold circuit. When one document is read, the magnitude of the sum is below the threshold voltage, and nothing results. However, when multiple documents are read, the magnitude of the sum is above the

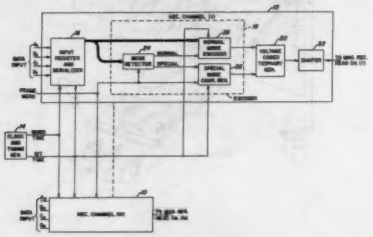
threshold voltage, and the threshold circuit causes a signal to be provided which sends the multiple documents to a reject pocket or slot in the reading system.

3,629,823

INFORMATION-HANDLING SYSTEM HAVING ERROR CORRECTION CAPABILITIES

Roy S. Czernikowski, Rochester, N.Y., assignor to General Dynamics Corporation

Filed Nov. 14, 1969, Ser. No. 876,982
Int. Cl. H03k *13/34*
U.S. Cl. 340—146.1 **10 Claims**



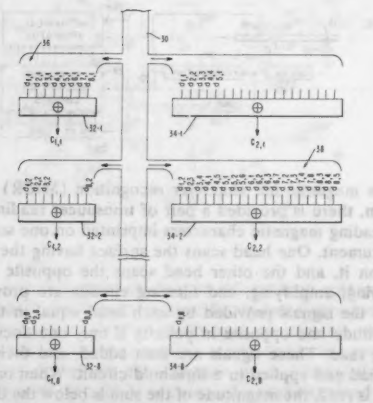
A system of storing digital data on multitrack magnetic records (tape or disc) with extremely high-packing density is described. The input data is encoded into unique four-tert, trilevel zero average format words. Because of the zero average property of the words, an alphabet of 18 zero average words is possible. A parity generator operative on a modulo 18 basis forms a parity word from the input data. This parity word is selected from the available alphabet of ternary words and is recorded in ternary form on one of the tracks in parallel with the ternary words for which it forms a parity check. On playback, the words are decoded and outputs are obtained indicating whether or not the words in each track are valid or invalid. A corrected word generator operative on a modulo 18 basis derives the corrected word and logic is provided for substituting a corrected word for the one of the playback data words which is indicated as being invalid.

3,629,824

APPARATUS FOR MULTIPLE-ERROR CORRECTING CODES

Douglas C. Bossen, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,847
Int. Cl. G06f *11/12*; G08c *25/00*
U.S. Cl. 340—146.1 **7 Claims**



Apparatus including an encoder adapted for encoding blocks of data into a sent message and a decoder adapted for recovering the data from a received message corresponding to the sent message but which may be in error wherein the blocks of data consist of K-bytes of data (D_1, D_2,...D_K) each of b bits. The sent message comprises the K-bytes of data plus two check bytes C_1 and C_2, each of b bits. The decoder is effective in recovering the data without error when not more than a single byte of the received message is in error no matter how many bits may be in error in the single byte. The encoder computes the check bytes according to the relationships

$$C_1 = ID_1 + ID_2 \ldots + ID_K$$
$$C_2 = A_1D_1 + A_2D_2 \ldots + A_KD_K$$

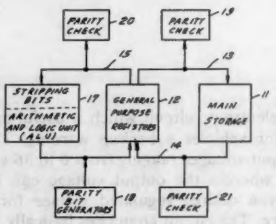
wherein I is the identity element and A_1, A_2,...A_K are distinct nonzero elements of Galois Field (2^b), wherein the indicated multiplication and addition are the Galois Field defined operations, and wherein b is an integer > 1, and K is an integer $2 < K < 2^b$.

3,629,825

ERROR-DETECTING SYSTEM FOR DATA-PROCESSING CIRCUITRY

Earl M. Bloom, Jr., Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1969, Ser. No. 881,240
Int. Cl. G06f *11/08, 11/12, 11/10*
U.S. Cl. 340—146.1 **6 Claims**



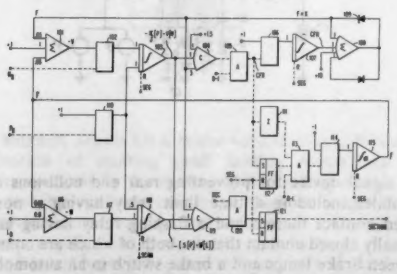
This invention is directed to error detection circuitry for combination with data-processing systems. The information which comprises the message transmission is transmitted in binary fashion in channels each of a selected number of data bits, and through the addition of two check bits it is possible to detect both single and double parity errors of the asymmetric-type.

3,629,826

SECTIONING APPARATUS AND METHOD FOR CHARACTER RECOGNITION SYSTEMS

Alfred Cutaia; John W. McCullough, and Don W. Piller, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1970, Ser. No. 338
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 R **18 Claims**



In character recognition systems, there exists the problem of recognizing adjacent characters which are touching rather

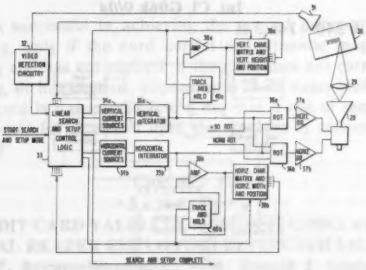
than being completely separated by blank spaces. The system described generates a section gate in dependence upon an algorithm geared to character topology. The section gate enables a segmentation system which is adapted to properly segment the characters.

3,629,827

SYSTEM AND METHOD FOR DETERMINING THE POSITION, HEIGHT AND WIDTH OF A CHARACTER MARKING

David L. Johnston, and Paul E. Nelson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,616
Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 H 13 Claims



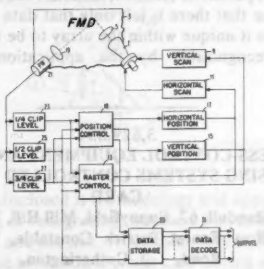
A beam is linearly swept across a character marking and stepped in directions perpendicular to the sweep. The extremes of the marking in four orthogonal directions, as determined during the sweep, are stored for use in controlling the positioning of a recognition scanning beam.

3,629,828

SYSTEM HAVING SCANNER CONTROLLED BY VIDEO CLIPPING LEVEL AND RECOGNITION EXCEPTION ROUTINES

Frederick M. Demer, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1969, Ser. No. 822,580
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3AG 4 Claims



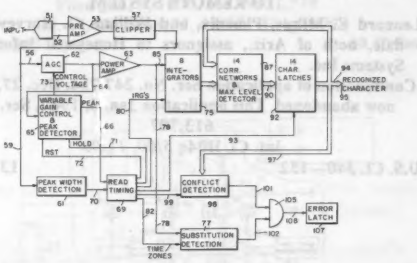
A character recognition system comprising a flying spot scanner with appropriate scanner controls for causing the scanner to execute a plurality of scanning modes, recognition data storage for storing the data received from the flying spot scanner, a recognition decoding section and a coded output section for providing outputs in accordance with the characters scanned. Particularly, the invention provides for incremental movement of the flying spot scanner beam governed by different levels of clipping level control to provide for location of the scanning beam with respect to the registration portion of a stylized character which is to be scanned; a data compression means which combines information in several different scanning areas into particular zones and stores the information; and means which will selectively provide one or more specifically located additional recognition scans as required over and above a normal number of recognition scans, to accommodate a few special characters.

3,629,829

CHARACTER RECOGNITION CIRCUITRY

Robert Ordower, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 9, 1969, Ser. No. 858,253
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3 Q 4 Claims



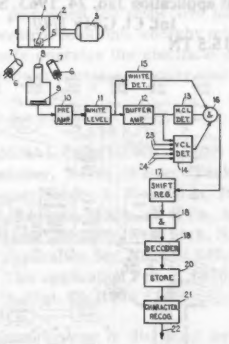
This invention is directed to method and apparatus for the reading and identification of characters on business documents and the like. Analog wave forms derived from scanning the characters are analyzed by integrating the signals in a plurality of time zones or divisions which span the width of the character. The integrated signals are then supplied to a plurality of correlation networks, one for each character to be recognized. The network having the highest output, as determined by maximum level detector means, represents the character which has been scanned.

3,629,830

CHARACTER RECOGNITION APPARATUS

Gordon George Scarrott, Welwyn Garden City, and Thomas M. McCormick, Clifton, both of England, assignors to International Computers Limited, London, England

Filed Nov. 25, 1969, Ser. No. 879,687
Claims priority, application Great Britain, Nov. 30, 1968, 56,959/68
Int. Cl. G06r 9/04
U.S. Cl. 340—146.3 H 4 Claims



A character recognition apparatus with a plurality of sensing devices arranged in a line for scanning elemental character areas in a direction perpendicular to the line. Scan signals are applied through corresponding preprocessing net-

works each of which includes horizontal and vertical center line detectors. The output of the detectors are combined in a gate which in turn produces a pulse whenever center lines are detected. The gate output pulse is held in a shift register with the contents of the shift register being examined by a logic circuit and decoder to determine whether a vertical portion of a character is being sensed with the decoder output being an outline of the character. The outline is then applied to a character recognition circuit. A white level detection circuit is provided to inhibit operation of the gate when blank paper is being sensed.

3,629,831

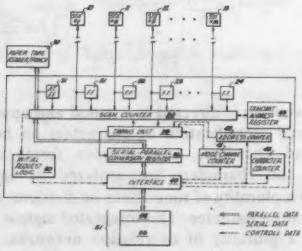
DATA TRANSMISSION CONTROLLER FOR CENTRAL TO REMOTE SYSTEM

Leonard E. Mikus, Phoenix, and William G. Harvey, Glendale, both of Ariz., assignors to Honeywell Information Systems Inc.

Continuation of application Ser. No. 247,734, Dec. 27, 1962, now abandoned. This application Jan. 3, 1967, Ser. No. 613,707

Int. Cl. H04q *5/00, 11/00*

U.S. Cl. 340—152 **13 Claims**



An apparatus for controlling a link in transferring information between a plurality of remote stations and a central location employing automatic data-processing equipment wherein the apparatus communicates with the central location in character serial form and communicates with the remote station in bit serial form. Selection means comprising a plurality of counters are actuated in a given manner to indicate the selection of a particular station.

3,629,832

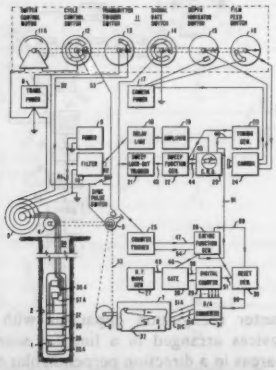
WELL LOGGING

Charles B. Vogel, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of application Ser. No. 493,999, Mar. 14, 1955. This application Jan. 24, 1963, Ser. No. 253,682

Int. Cl. G01v *1/40*

U.S. Cl. 340—15.5 TN **5 Claims**



3. In an acoustical logging system including at least one receiver and a repetitively excited transmitter contained within an instrument adapted to traverse a borehole, a method for reducing the incidence of erroneous recorded measurement comprising:

a. generating a relatively large signal in time relationship to the excitation of the transmitter;

b. rendering effective a normally ineffective recording system in response to said relatively large signal;

c. and rendering said recording system ineffective in response to succeeding relatively smaller signals from the receiver contained in said subsurface instrument.

3,629,833

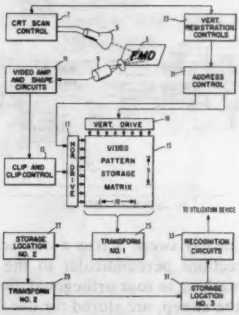
CHARACTER RECOGNITION SYSTEM EMPLOYING A PLURALITY OF CHARACTER COMPRESSION TRANSFORMS

Frederick M. Demer, 307 Robin Lane, Vestal, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,450

Int. Cl. G06k *9/04*

U.S. Cl. 340—146.3 H **3 Claims**



A character recognition system, based upon a low-resolution video scanner, in which the binarized video data from sequential vertical scans is laterally related and registered in a two-dimensional storage.

The data in this storage, a two-dimensional pattern of the character to be recognized, is logically relocated and compacted prior to the application of recognition criteria for the purposes of eliminating the differences in patterns caused by various styles and sizes of the same character; filling data voids resulting from low-density characters; and excluding redundant data derived from heavily imprinted characters. The logical operations (transformations) reduce the patterns to the degree that there is left only that data in each pattern which makes it unique within the array to be recognized, and therefore recognizable by the application of minimum criteria.

3,629,834

ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS CONTROLLED BY CREDIT CARD

William E. Randall, 67, Sunnyfield, Mill Hill, London, N.W.7, and Geoffrey Ernest Patrick Constable, Withy Furlong, Malleson Road, Gotherington, Cheltenham, Gloucestershire, both of England, assignors to Chubb & Son's Lock and Safe Company Limited; Smith's Industries Limited; Cricklewood Works, all of London, England, part interest to each

Filed Aug. 19, 1969, Ser. No. 851,301

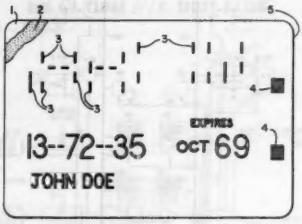
Claims priority, application Great Britain, Aug. 30, 1968, 41,423/68

Int. Cl. H04q *1/00, 3/00*

U.S. Cl. 340—149 **14 Claims**

A money-dispensing system is operative to dispense money in response to a bank customer's embossed credit card and keyed entry of his personal identification number, only if this number accords with the customer's account number as read from an accounting record impressed from the card. Accord is checked at the bank's central computer and approval for

dispensing, and return of the card to the customer, is given by an encyphered signal transmitted back to the dispensing terminal. The card is returned to the customer, whether or



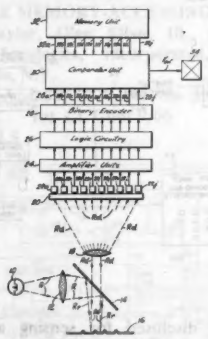
not he is successful in achieving the accord necessary for dispensing, only if the card carries an authentic magnetic recording and has not expired. If the card does not carry the recording, or has expired, dispensing is in all cases inhibited and the card is transported into a bin that is out of reach of the customer for retention until the machine is serviced by bank staff.

3,629,835

CREDIT CARD VALIDATION SYSTEM USING AN OPTICAL READER EMPLOYING REFLECTED LIGHT

William F. Brown, Wappingers Falls; Ronald J. Goetchius, Fishkill; George R. Furman, Glenham, and Alan D. Rouse, Pawling, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 21, 1969, Ser. No. 826,473
Int. Cl. H04q *3/00, 5/00*
U.S. Cl. 340—149 **2 Claims**



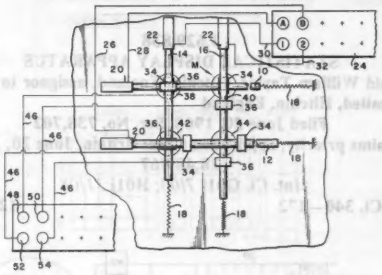
Hereinafter disclosed is methodology and apparatus for optically reading, or recognizing, numbers on such articles such as credit cards and the like. According to one illustrative embodiment of the invention a credit card having an identifying number, or account number, consisting of a plurality of decimal digits is illuminated by a source of light. Reflected light from the face of the card is directed through a lens and projected on a mask which has a plurality of unique hole patterns therein. The light reflected from the digits on the card is considerably darker than the light reflected from other portions of the card. There is provided in the mask an individual pattern, or array, of holes for each digit's reflected light. Each hole in each pattern of holes has associated therewith a photodetector. Hence, each pattern of holes has a corresponding pattern of photodetectors. For each of the decimal digits 0 through 9 on the card a unique pattern of illuminated and nonilluminated (or light and dark) photodetectors results. This unique pattern, or array, of light and dark photodetectors provides a unique set of signals which are representative of the particular decimal digit whose light has been reflected on the hole pattern in the mask. Ultimately, sets of such signals representing all the decimal digits are delivered to a comparator for the purpose of determining whether or not the number on the credit card corresponds to a like number stored in suitable storage means; said stored number also being delivered to the comparator.

3,629,836

CROSSBAR MATRIX FOR PROGRAMMED SWITCHING

Bernard Edward Shlesinger, Jr., 3906 Bruce Lane, Annandale, Va.

Filed Jan. 9, 1970, Ser. No. 1,774
Int. Cl. H01h *63/02, 67/02;* **H04g** *9/00*
U.S. Cl. 340—166 R **68 Claims**



A crossbar matrix for programmed switching and operation of electrical devices including a first series of bars mounted for movement in a first coordinated direction between operative and inoperative positions; each bar of the first series having a series of spaced first energy-emitting devices or energy controlling devices; a second series of bars mounted for movement in a second coordinated direction between operative and inoperative positions; each bar of said second series having a series of spaced second energy-emitting devices or energy controlling devices; means for selectively moving the bars; the second and first energy-emitting devices or energy-controlling devices forming pairs cooperating only when the respective bars of each pair are moved to operative positions; an electrically energizing component for each of the pairs operated only upon cooperation of its respective pair when the respective bars of each pair are moved to operative positions; whereby selectively moving the bars selectively operates the electrical energy-operated components thereby cooperates selective electrical devices.

3,629,837

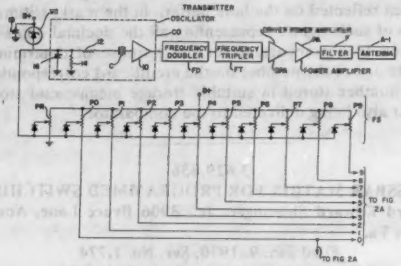
CODED SIGNAL COMMUNICATION SYSTEM

James A. Fraunfelder, North Wales; Frank C. Getz, Jr., Upper Providence; Sidney L. Kauffman, Jr., Swarthmore, and William H. Kurlans, Media, all of Pa., assignors to Gulf & Western Systems Company, New York, N.Y.

Continuation of application Ser. No. 654,649, July 19, 1967, now abandoned. This application Feb. 2, 1970, Ser. No. 7,373
Int. Cl. H04q *11/02*
U.S. Cl. 340—171 **21 Claims**

A communication system is disclosed herein which includes a plurality of transmitters, each operative to transmit at least one transmitter address frequency pulse and a message frequency pulse, wherein each frequency pulse is of a frequency selected from one of 10 different frequencies of respectively increasing decimal weight representative of

decimal numbers 0 through 9. A receiver serves to decode the frequency pulses and provide a decimal readout indication thereof, as by a visual decimal readout, so that both the message and transmitter address may be displayed.

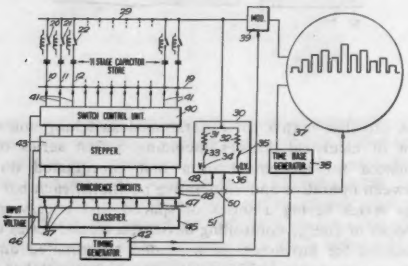


3,629,838

STATISTICAL DISPLAY APPARATUS

Ronald William Taylor, Hitchin, England, assignor to Datran Limited, Hitchin, England

Filed June 20, 1968, Ser. No. 738,702
Claims priority, application Great Britain, June 20, 1967, 28,489/67
Int. Cl. G01f 7/00; H01j 31/08
U.S. Cl. 340—172 **12 Claims**



A statistical display apparatus for displaying information about the magnitude of a variable in histogram form comprises a number of capacitors corresponding to the number of classes into which the magnitude of the variable is to be classified. The variable is periodically sampled and, in accordance with the magnitude of the sample, an appropriate capacitor is selected by a stepping-switch unit and a unit charge is fed into the selected capacitor. In this selection, all the capacitors are scanned by the stepping switch and part of the charge is removed from each capacitor. The capacitors are also scanned in sequence and the magnitudes of their charges are displayed on a cathode-ray tube.

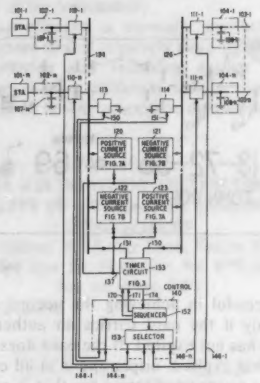
3,629,839

TIME DIVISION MULTIPLEX SWITCHING SYSTEM

James Owen Dimmick; Theras Gordon Lewis, and John Francis O'Neill, all of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 13, 1970, Ser. No. 27,892
Int. Cl. H04j 3/00
U.S. Cl. 340—172.5 **27 Claims**

A time division switching system includes a first and a second group of storage devices. A selected first group storage device is connected to a first common bus and a selected second group storage device is connected to a second common bus during the same time interval. The outputs of the selected storage devices on the buses are sampled from the buses and opposite polarity constant current pulses



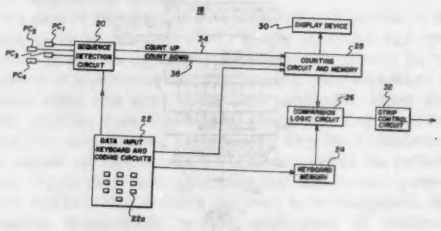
are applied to said common buses for a period of time corresponding to the difference between the sampled outputs whereby the sampled outputs are exchanged between the selected storage devices.

3,629,840

APPARATUS FOR SENSING AND COUNTING IMAGES DISPOSED ON INFORMATION-BEARING MEDIA

Robert E. Cullen, Foxborough, Mass., assignor to Eastman Kodak Company

Filed Apr. 24, 1970, Ser. No. 31,475
Int. Cl. G06f 7/28
U.S. Cl. 340—172.5 **17 Claims**

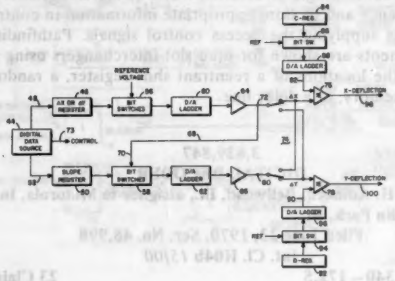


Apparatus is disclosed for sensing and counting the number of information images disposed on an information-bearing medium such as a strip of microfilm. At least first and second rows of images are recorded on a strip of microfilm and apparatus is disclosed herein for counting marks or indicia associated with each of the information images (or frames). More specifically, the apparatus includes a first set of means disposed to sense the counting marks of the first row as the strip is moved in a first direction and to provide signals which are counted to indicate the number of images in the first row. Further, the apparatus includes a second set of means disposed to sense the counting marks in the second row as the strip is moved in a second opposite direction and to enable the apparatus to continue sequentially to count the images in the second row. In an illustrative embodiment of this invention, the first set of means may provide signals indicative of counting down the images in the first row as the strip is moved in the second direction; and the second set of means may provide signals indicative of counting down the images in the second row as the strip is moved in the first direction.

3,629,841
VECTOR GENERATOR APPARATUS

Charles A. Hare, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,337
Int. Cl. G06f *3/14*; H01j *31/08*
U.S. Cl. 340—172.5 **2 Claims**

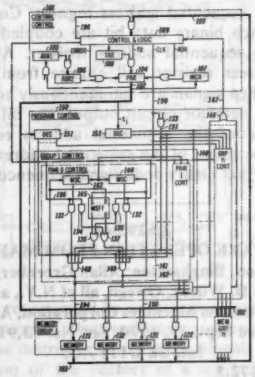


A vector generator for use with a cathode-ray tube (CRT) display for forming line segments of a desired length and at a desired angle with respect to a reference. Digital signals from a computer or other source, representative of an incremental change in the coordinates in the line segment to be formed and of the slope of the segment are converted to analog signals and applied to summing amplifiers along with analog signals representative of an initial X and Y coordinate location of a point on the line segment to be formed. The output of the summing amplifiers are analog signals which are coupled to the CRT deflection electrodes such that when the beam is unblanked, the beam will trace a path from the point (X_1, Y_1) to the point $(X_1+s\Delta Y_2)$, $(Y_1+\Delta Y_2($.

3,629,842
MULTIPLE MEMORY-ACCESSING SYSTEM

Frank Finley Taylor, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,274
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **20 Claims**

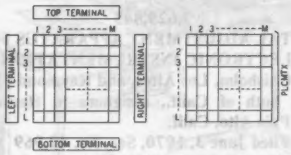


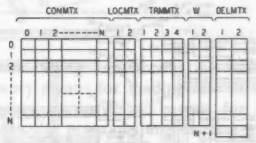
A memory-accessing system is disclosed which is comprised of a plurality of pairs of memories, a decoder, and an access control means. Identical instruction sets are stored in each memory of a memory pair and consecutive address locations correspond to consecutive memory pairs. The decoder is responsive to memory addresses to select one memory pair for access. The access control means is then operative to select the one memory, of the memory pair selected by the decoder, which was accessed the longest time in the past and to provide a transmission path for the memory address to the selected memory.

3,629,843
MACHINE PROCESS FOR ASSIGNING INTERCONNECTED COMPONENTS TO LOCATIONS IN A PLANAR MATRIX

Arnold Herbert Scheinman, Deal, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 11, 1970, Ser. No. 36,233
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **14 Claims**



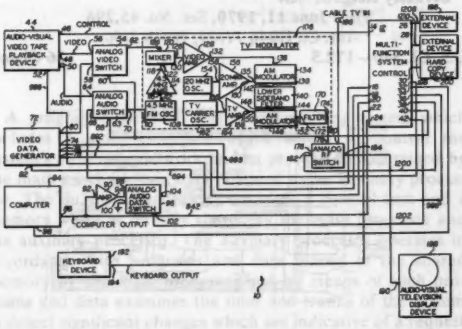


Initially, components are assigned arbitrarily to locations in a planar matrix. Horizontal pairwise interchanges of adjacent components are then made if either (1) the absolute sum of the horizontal "moments" of the adjacent components or the system "moment" is made lower thereby. Vertical and diagonal pairwise interchanges are then made according to a similar criteria. This sequence of operations may be repeated as often as desired by the user until an acceptable configuration is obtained.

3,629,844
MULTIFUNCTION ROUTING NETWORK

Douglas E. Dancis, Putnam Valley; Gerald E. Dorfuss, White Plains, and Benjamin C. Zitron, New York, all of N.Y., assignors to Allied Management & Systems Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,795
Int. Cl. G06f *9/19, 3/00, 15/56*
U.S. Cl. 340—172.5 **23 Claims**



A multifunction routing network. The routing network is provided with a function control means including a condition responsive logic network having an iterative multifunction

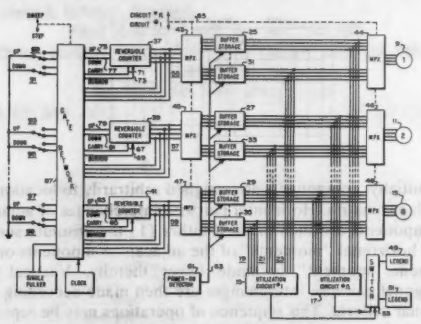
control loop. Register and memory means are also provided in the routing network which are operatively associated with the control means for providing input conditions thereto and for receiving output conditions therefrom. The logic network is provided with a multistable means having a plurality of states and is responsive to the states thereof and the input conditions thereto to provide a plurality of control functions of both a data control and an execute non-data control nature for the routing network. A computer, an input keyboard, an audiovisual playback device, and a television are also provided which are operatively associated with the register and memory means for providing input conditions thereto and for responding to output conditions therefrom.

3,629,845

DIGITAL ADJUSTMENT APPARATUS FOR ELECTRONIC INSTRUMENTATION

Hamilton C. Chisholm, Los Altos, and Raymond M. Shannon, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 3, 1970, Ser. No. 42,969
Int. Cl. G05b *21/00*; H03k *19/00*
U.S. Cl. 340—172.5 **8 Claims**



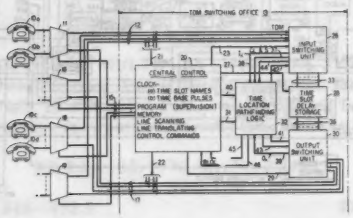
An electronic instrument for processing signals containing analog information includes a logic circuit which responds to operator-originated digital signals to incrementally alter the values of selected parameters of the signal processed by the instrument.

3,629,846

TIME-VERSUS-LOCATION PATHFINDER FOR A TIME DIVISION SWITCH

John Stewart Thompson, Sea Bright, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 11, 1970, Ser. No. 45,296
Int. Cl. H04q *11/04*; H04b *3/0c*
U.S. Cl. 340—172.5 **26 Claims**



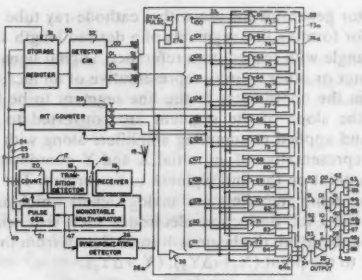
Storage access to multiple storage locations is coordinated for the time slots of successive frames of a time slot interchange operation in a time division multiplex system by registering location access control signal changes, identifying first and second time slots of interest, and then identifying a transmission path in the form of a time-location sequence of uniform location availability status between such time slots in the time-storage domain of the locations. Time coordinates of the termini of the sequence are registered for use by the system's control logic to determine one or more locations of the sequence and to store appropriate information in control memories supplying the access control signals. Pathfinding embodiments are shown for time slot interchangers using as storage the locations of a reentrant shift register, a random access memory, or a delay line.

3,629,847

DIGITAL DECODER

Richard H. Adlhoch, Bellwood, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 23, 1970, Ser. No. 48,998
Int. Cl. H04b *15/00*
U.S. Cl. 340—172.5 **23 Claims**



A digital decoder for a receiver including a two-stage storage register, a detector circuit, a bit counter and a 12-stage sequential address register. Each stage of the sequential address register is coupled to the bit counter and selectively coupled to the detector circuit output according to the binary code signal sequence. The binary code signal sequence is serially coupled to the storage register where it is detected by the detector circuit to develop an output signal which is coupled to the sequential address register. Counting pulses representing each binary data bit are coupled from the bit counter to the sequential address register. A stage of the sequential address register will change from a first to a second state when signals are simultaneously coupled to that stage from the detector circuit output, the bit counter, and the prior stage of the sequential address register. Serial operation of the stages of the sequential address register will occur if the correct binary code signal sequence is received.

3,629,848

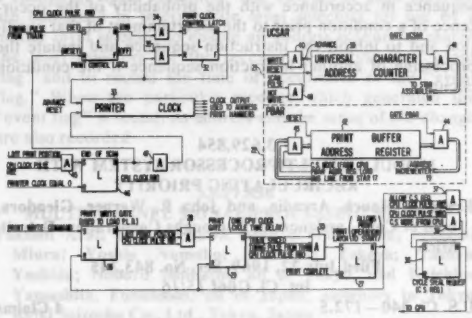
PRINT COMPARE OPERATION FROM MAIN STORAGE

Robert G. Gibson, Binghamton; Allan Greenberg, Poughkeepsie, and John D. Wilcox, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,918
Int. Cl. G11c *7/00*
U.S. Cl. 340—172.5 **5 Claims**

An adapter for controlling the operation of chain/train printers employs the main storage of a central processing unit to store characters to be printed and an image of the chain. Two hardware address registers are provided to read out or load the contents of the two storage areas. One register is used to address the character to be printed in the print line area. The second register addresses the character properly aligned with the print position to be printed. The two characters are read out of storage sequentially via a "cycle steal" technique. Upon acceptance of a cycle steal request, the con-

tents of the first address register is entered into the storage address register, and the proper chain character is read out into the cycle steal register and then transferred to the



universal character set register. A second cycle steal is begun by presenting the contents of the second address register to the storage address register. The proper print line character is then read out into the cycle steal register. The two characters are then compared to determine if a print hammer is to be fired.

3,629,849

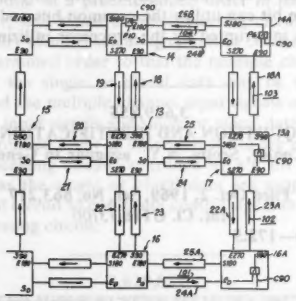
PATTERN RECOGNITION, AND PARTICULARLY DETERMINATION OF HOMOMORPHY BETWEEN VECTOR SYSTEMS FORMING INTERRELATED STRUCTURES

Jacques Sauvan, Paris, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris, France

Continuation-in-part of application Ser. No. 634,387, Apr. 27, 1967, now abandoned. This application Apr. 27, 1970, Ser. No. 32,334

Int. Cl. G06f *7/02*; **G06g** *7/28*; **G11b** *13/00*

U.S. Cl. 340—172.5 **36 Claims**



A pattern is represented by vectors in a coordinate system. A matrix, forming an electrical analog of a vector, or point units within the matrix, is constructed, signals representative of the direction of the vectors of a second vector group (structure) are then generated and sequentially applied to the matrix; upon noncoincidence of the signal representative of change of orientation of the vector traversing the circuit, further comparison is stopped and the state of the circuit is stored, so that an indication of similarity of a structure, as represented by the signals with another structure, as represented by the circuit is obtained, to the extent that such a similarity exists. In a modification, fictitious signals may be generated to provide continuity for noncontinuous vector quantities or to simulate specific problems.

3,629,850

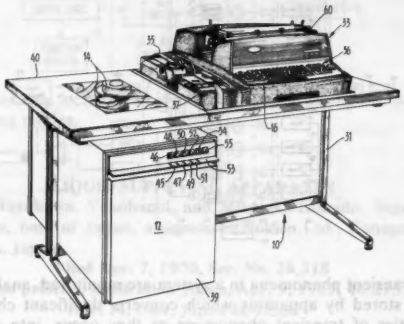
FLEXIBLE PROGRAMMING APPARATUS FOR ELECTRONIC COMPUTERS

William R. Clark, Castro Valley; George H. Hare, Oakland, and Peter E. Osborn, San Leandro, all of Calif., assignors to The Singer Company

Filed Nov. 25, 1966, Ser. No. 596,920

Int. Cl. G06f *9/06*

U.S. Cl. 340—172.5 **16 Claims**



An electronic billing and accounting machine having a program memory means for loading one or more programs into the program memory, and means for requesting and identifying particular programs and causing execution of the particular programs once identified in the program memory.

3,629,851

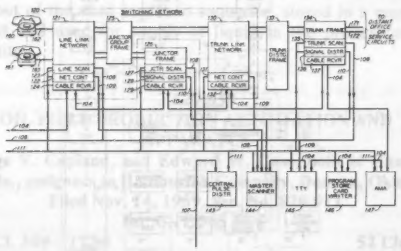
SCANNER CONTROL CIRCUIT FOR A PROGRAM-CONTROLLED COMMUNICATION SWITCHING SYSTEM

Ulrich Werner, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 868,170

Int. Cl. G06f *15/16*, *13/00*

U.S. Cl. 340—172.5 **9 Claims**

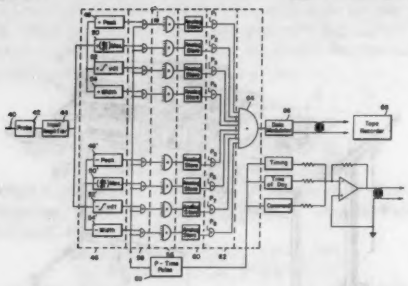


A program-controlled telephone switching system which includes a main processor which serves to control the system's switching network and to process data obtained by the main processor and data obtained by an auxiliary processor. The auxiliary processor comprises a control unit and a memory which is directly shared by the main processor and the auxiliary processor. The auxiliary processor operates in accordance with programs and data placed in the shared memory by the main processor and by means of such programs and data examines the lines and trunks of the system to detect significant changes which are indicative of a request for attention by a line or trunk. Upon detection of a significant condition, the auxiliary processor places a record in the shared memory which identifies the line or trunk which has experienced a significant change.

3,629,852
TRANSIENT ANALYZER

Melvin W. Thexton, La Palma, Calif., and Stanley R. Schaub, Brussels, Belgium, assignors to Pioneer Magnetics, Inc.

Filed Feb. 13, 1969, Ser. No. 807,162
Int. Cl. G01r 27/28
U.S. Cl. 340—172.5 21 Claims

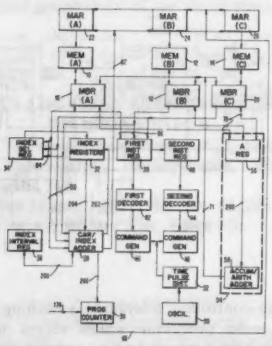


Transient phenomena in a system are monitored, analyzed, and stored by apparatus which converts significant characteristics of transient phenomena as they occur, into quantified, electrical signals. The significant characteristics include positive and negative peaks, duration of positive and negative transient, and the rate of "rise" of positive and negative transients. The quantified data can be applied in real time to a display apparatus to provide a chronological record of each of the characteristics, or can be stored in a relatively low-bandwidth memory system for subsequent playback into display apparatus.

3,629,853
DATA-PROCESSING ELEMENT

John D. Newton, Kingston, N.Y., assignor to International Business Machines Corporation, New York, N.Y.

Filed June 30, 1959, Ser. No. 823,988
Int. Cl. G06f 9/10
U.S. Cl. 340—172.5 34 Claims

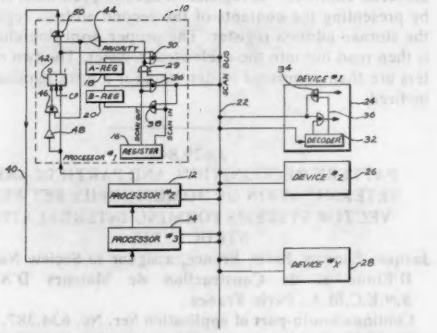


A digital computer system having multiple memory units for storing information words representative of data and instructions, control means including means for extracting information words from the memory units, and two instruction registers. A first instruction register stores an instruction while first steps in the manipulation thereof are performed and a second instruction register stores the instruction while second steps in the manipulation thereof are performed. The computer further includes means for transferring an instruction from the first instruction register to the second instruction register and means for transferring a further instruction to the first instruction register for effecting the concurrent processing of two instructions. Both data and instruction words may be extracted from different memory units at the same time. Control logic provides signals indicative of memory accessibility. The computer is also adapted to conditionally proceed with the processing of an instruction sequence in accordance with the probability of the occurrence of a condition prior to the ascertainment of that condition and to inhibit the instruction sequence and initiate the processing of another instruction sequence if the condition occurs.

3,629,854
MODULAR MULTIPROCESSOR SYSTEM WITH RECIRCULATING PRIORITY

Erwin A. Hauck, Arcadia, and John R. Werner, Glendora, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 22, 1969, Ser. No. 843,345
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 4 Claims

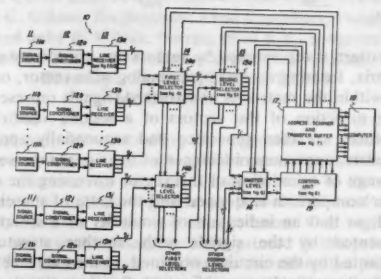


A computer having any number of processors of equal capability in the system, each processor being able to scan all peripheral devices over a common bus, with priority resolution being provided by connecting the processors in a closed loop on which is circulated a priority bit. Only the processor receiving the bit can utilize the common bus and circulation of the bit is interrupted by the processor utilizing the common bus.

3,629,855
DATA ACQUISITION AND IDENTIFICATION SYSTEM

James W. Conley, Scotia, N.Y., assignor to General Electric Company

Filed Oct. 2, 1969, Ser. No. 863,217
Int. Cl. G11b 13/00
U.S. Cl. 340—172.5 14 Claims



A method and apparatus are disclosed for monitoring a plurality of signal sources to detect the time of occurrence of

a change in signal condition from any of the signal sources, the sign of the change and the signal source generating the change. The monitoring is performed by source-associated receivers which generate an "event flag" upon occurrence of a change in signal condition. The outputs of each receiver are combined in intermediate level selectors for use by a master level selector to enable an address scanner to search the level selectors for the receiver generating the "event flag" and to record the time of occurrence of the "event flag." When the particular receiver which generated the "event flag" is found, its address and the sense of the change are also recorded.

3,629,856

MULTICHANNEL SIGNAL-PROCESSING SYSTEM

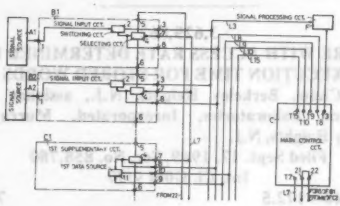
Takeshi Arai; Hideo Aizawa, both of Yokohama; Masashi Miura; Yoshio Numaho; Masahisa Takeya; Tasuku Yoshida; Noboru Ishibashi, all of Tokyo, and Kaichiro Yamashita, Funabashi, all of Japan, assignors to Tokyo Keiki Seizosho Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1970, Ser. No. 21,119

Claims priority, application Japan, Mar. 22, 1969, 44/21415

Int. Cl. G06f *3/04*

U.S. Cl. 340—172.5 **11 Claims**



A multichannel signal-processing system having a simplified arrangement wherein multiple signal channel-selecting circuits for multiple channel input signals and a supplementary channel-selecting circuit or circuits corresponding to single or plural data available from supplementary circuit or circuits each having a data source is loop connected in series with each other in a predetermined order in the form of a ring counter, said signal channel-selecting circuits and said supplementary channel-selecting circuit or circuits are driven in a predetermined order so that the multiple channel input signals and the single or plural data may be successively selected, and the multiple channel input signals of the multiple channel input signals and single or plural data selected in the predetermined order as described above are processed in a signal-processing circuit controlled by a main control circuit, whereas the single or plural data are supplied to the main control circuit to constitute control signal to control the signal-processing circuit.

3,629,857

COMPUTER INPUT BUFFER MEMORY INCLUDING FIRST IN-FIRST OUT AND FIRST IN-LAST OUT MODES

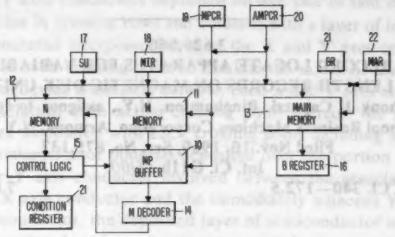
Ulbe Faber, Honeybrook, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 18, 1969, Ser. No. 859,139

Int. Cl. G11c *7/00*

U.S. Cl. 340—172.5 **12 Claims**

This disclosure relates to a memory or storage array that can be accessed randomly and also in both a first in-first out mode and a first in-last out mode. The array is word oriented and each word location is provided with an indicator flip-flop which is placed in a ONE state when a word has been entered therein, the flip-flop being reset to ZERO when the word has been fetched from that location in a nonrandom access mode. Address logic is provided to select the next successive location in one of the fetching modes having the same sequence as the storage mode. In addition, the address logic provides for selecting locations in an opposite sequence and



for selecting locations in a random manner during the other fetching modes.

3,629,858

LIQUID SUPPLYING APPARATUS

Ken Hayakawa, Yokohama, and Mitsuaki Tamada, Sagamihara, both of Japan, assignors to Tokico Ltd., Kanagawa-Ken, Japan

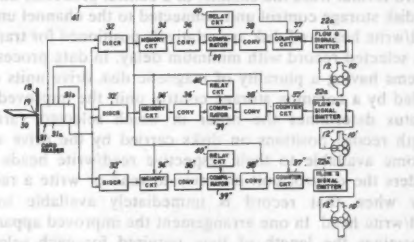
Filed Apr. 7, 1970, Ser. No. 26,318

Claims priority, application Japan, Apr. 9, 1969, 44/27550

Apr. 14, 1969, Japan 44/27550

Int. Cl. G07f *13/00*

U.S. Cl. 340—172.5 **6 Claims**



A liquid-supplying apparatus including a card reader having a single card insertion opening connected to a plurality of liquid-supplying systems for varieties of liquid. The kinds and quantities of liquid are respectively read from cards put in and out of the card reader in sequence, stored in a memory circuit and used for supply of liquid in the predetermined quantity.

3,629,859

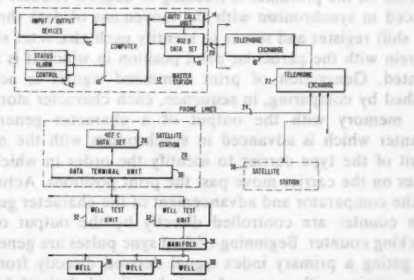
OIL FIELD PRODUCTION AUTOMATION AND APPARATUS

George V. Copland, and Edward W. Gass, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 14, 1969, Ser. No. 876,911

Int. Cl. H04b *3/00*

U.S. Cl. 340—172.5 **52 Claims**



Method and apparatus for remote computer evaluation

and control of oil fields commercially installed telephone lines. Digital well condition sensors and interface circuitry for asynchronous data transmission are disclosed.

3,629,860

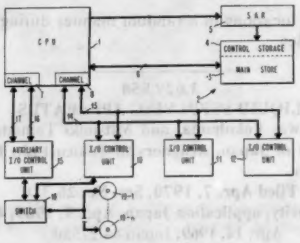
RECORD LOCATE APPARATUS FOR VARIABLE LENGTH RECORDS ON MAGNETIC DISK UNITS

Anthony J. Capozzi, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,137

Int. Cl. G11b *13/00*

U.S. Cl. 340—172.5 **7 Claims**



Improved control apparatus which is independent of record format frees the channel of a central processor and/or the disk storage control unit connected to the channel until a read/write head and disk are relatively positioned for transfer of a selected record with minimum delay. In data processing systems having a plurality of magnetic disk drive units controlled by a common storage control unit, the improved apparatus determines the order in which selected variable length record positions on disks carried by the drive units become available to their respective read/write heads and renders the control unit effective to read or write a record only when that record is immediately available to its read/write head. In one arrangement the improved apparatus determines the length of time required for each selected record position to reach its respective read/write head and in the event that considerable delay will be encountered, it frees the channel and control unit for other processing work during the delay.

3,629,861

CONTROL FOR CHAIN PRINTER

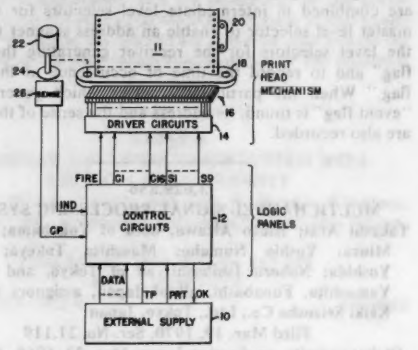
Lynn W. Marsh, Jr., Melrose, and Edward M. Schneiderhan, Billerica, both of Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,354

Int. Cl. G06k *15/08*

U.S. Cl. 340—172.5 **8 Claims**

A control system for a horizontal-type carrier, or "chain," printer wherein a recirculating shift register memory is employed to store the code representations of characters to be printed on the printline. A tracking or address counter is advanced in synchronism with the movement of data through the shift register and serves to identify each character stored therein with the particular print position in which it is to be printed. Generation of print command signals is accomplished by comparing, in sequence, each character stored in the memory with the output of a character generation counter which is advanced in synchronism with the movement of the type carrier to identify the order in which the types on the carrier move past the print positions. Actuation of the comparator and advancement of the character generation counter are controlled directly by the output of the tracking counter. Beginning-of-font sync pulses are generated by gating a primary index signal derived directly from the type carrier with a secondary index signal derived from a rotating code disc. A plurality of index marks are provided on the code disc in a manner to enable generation of properly timed beginning-of-font signals for any of a variety



of different font length type carriers interchangeably employable in the printer.

3,629,862

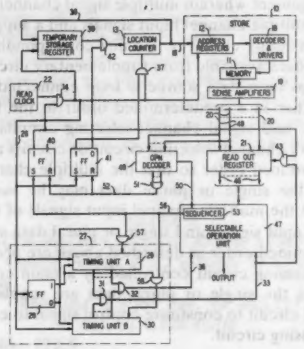
STORE WITH ACCESS RATE DETERMINED BY EXECUTION TIME FOR STORED WORDS

Woo F. Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 17, 1969, Ser. No. 858,780

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **7 Claims**



The long term effective access time of a single store is reduced by applying successive access drives at a rate which is greater than the rate normally permitted by the memory access-to-readout period. Processor instructions which are read out of the store are decoded and utilized to effect a temporary suspension in the application of access signals during the execution of each instruction requiring an execution time in excess of the access drive rate.

3,629,863

FILM DEPOSITED CIRCUITS AND DEVICES THEREFOR

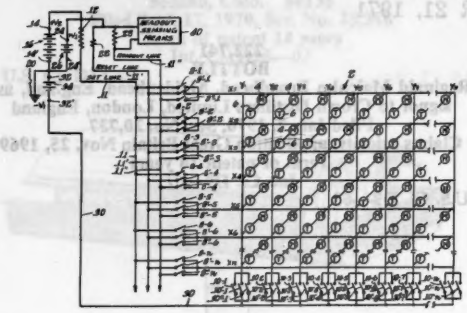
Ronald G. Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 4, 1968, Ser. No. 773,013

Int. Cl. G11c *11/36*

U.S. Cl. 340—173 **25 Claims**

An entire circuit is formed by a number of overlapping

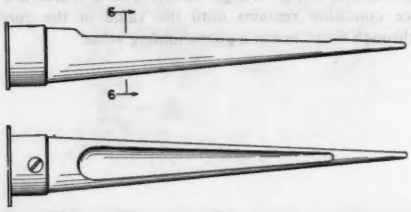


deposited films of conduct semiconductor and insulating materials. A switching matrix circuit made in accordance with the invention comprises an insulating base, bands of X and Y axes conductors deposited on one side of said insulating base in crossing rows and columns with a layer of insulating material interposed between the X and Y axes conductors at each crossing point to insulate the same. At least one switch device is coupled between each X and Y axes conductor adjacent each active crossing point thereof, the switch device associated with each crossing point including a layer of semiconductor material deposited over the portion of the X or Y axis conductor involved between the associated Y and X axis conductor and the immediately adjacent Y or X axis conductor, the deposited layer of semiconductor material associated with each crossing point having a relatively high-resistance condition which is switched to a relatively low-resistance condition when the value of a voltage applied thereto reaches a first voltage threshold level which low-resistance condition remains until the value of the current therethrough drops below a given holding value.

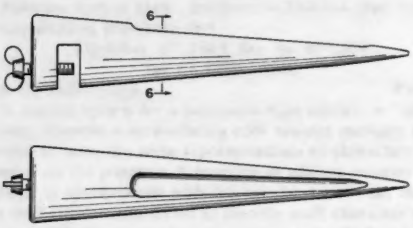
DESIGNS

DECEMBER 21, 1971

222,739
WALL MOUNTED FID
Edward I. Friedman, Warwick, R.I.
(32 Westminster St., Providence, R.I. 02903)
Filed Sept. 21, 1970, Ser. No. 25,078
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



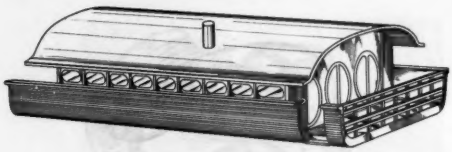
222,740
FID
Edward I. Friedman, Warwick, R.I.
(32 Westminster St., Providence, R.I. 02903)
Filed Sept. 21, 1970, Ser. No. 25,077
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



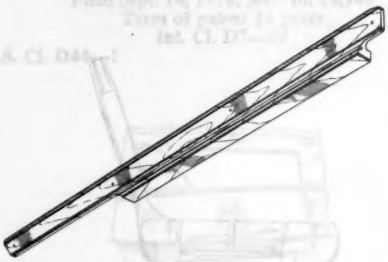
222,741
BOTTLE
Reginald Malcolm Broadhead, Maidenhead, England, assignor to Crown Distillers Limited, London, England
Filed Jan. 2, 1970, Ser. No. 20,737
Claims priority, application Great Britain Nov. 25, 1969
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—63

222,742
BOTTLE
Reginald Malcolm Broadhead, Maidenhead, England, assignor to Crown Distillers Limited, London, England
Filed Sept. 4, 1970, Ser. No. 24,843
Claims priority, application Great Britain Mar. 13, 1970
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67

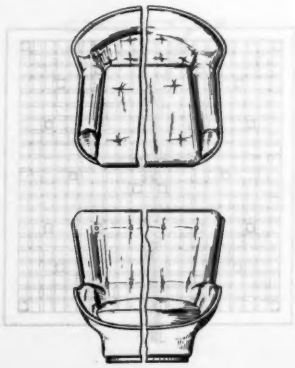
222,743
BUILDING
John B. Shaw, Cherokee Ranch, Sedalia, Colo. 80135
Filed Sept. 17, 1970, Ser. No. 25,318
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



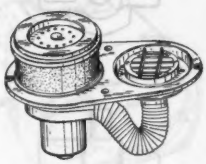
222,744
DECORATIVE SILL AND RAIL COMBINATION FOR AUTOMOBILE WINDOWS
Robert G. T. Reilly, Tustin, Calif., assignor to Autogear of California, Orange, Calif.
Filed June 15, 1970, Ser. No. 23,478
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



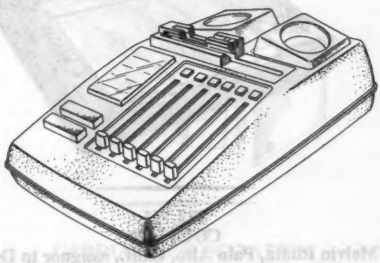
222,745
CHAIR
Charles Bernard, Montreuil-sous-Bois, France, assignor to Airborne S.A., Montreuil-sous-Bois, France
Filed Oct. 8, 1969, Ser. No. 19,453
Claims priority, application France Apr. 28, 1969
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D15—11



222,746
COMBINED AIR PURIFIER AND DEODORIZER FOR AUTOMOBILES
John E. Gilbertson, 3209 Douglas Ave., Des Moines, Iowa 50309
Filed June 25, 1970, Ser. No. 23,667
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—149



222,747
CREDIT CARD DATA TERMINAL
Leonard N. Albrecht, Tiberon, Calif., assignor to Albert J. Day
Filed Nov. 12, 1970, Ser. No. 25,948
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

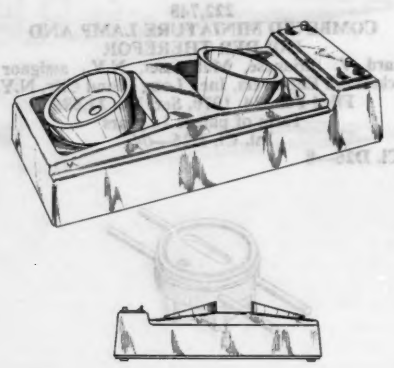


222,748
COMBINED MINIATURE LAMP AND HOLDER THEREFOR
Bernard V. Strianese, Manhasset, N.Y., assignor to Ackerman Engravers, Inc., Long Island City, N.Y.
Filed Feb. 24, 1970, Ser. No. 21,598
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

222,749
LAMP CORD SWITCH
Herbert G. Lehmann, 5 Kent Road, Easton, Conn. 06612
Filed Apr. 30, 1970, Ser. No. 22,724
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

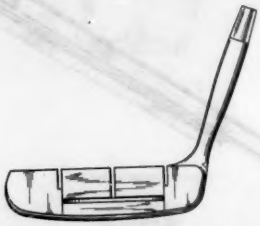
222,750
CHART RECORDER
Severin L. Johassen, Lafayette Hill, and Harper Landell, Fort Washington, Pa., assignors to Leeds & Northrup Company, North Wales, Pa.
Filed Oct. 7, 1970, Ser. No. 25,366
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14

222,751
COUPLER
Melvin Rudin, Palo Alto, Calif., assignor to Datel Corporation, McLean, Va.
Filed Nov. 4, 1970, Ser. No. 25,828
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

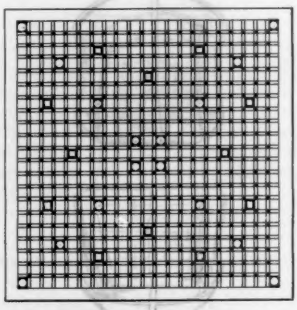


222,752
GOLF PUTTER HEAD
Raymon W. Cook, 1026 Mount Eden, San Antonio, Tex. 78213
Filed Feb. 3, 1970, Ser. No. 21,227
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

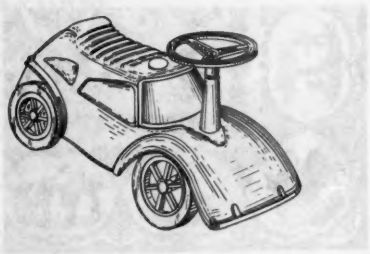
222,753
GOLF PUTTER HEAD
Raymon W. Cook, 1026 Mount Eden, San Antonio, Tex. 78213
Filed Feb. 3, 1970, Ser. No. 21,229
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



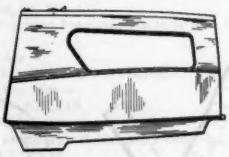
222,754
GAME BOARD
James A. Jones, 1637 Prospect Ave., Willow Grove, Pa. 19090
Filed Apr. 13, 1970, Ser. No. 22,378
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



222,755
RIDING TOY
John M. Michael, Philadelphia, Pa., assignor to Carolina Enterprises, Inc., Tarboro, N.C.
Filed Aug. 10, 1970, Ser. No. 24,402
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15

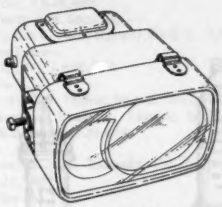


222,756
HOUSING FOR A PORTABLE FOOD MIXER
Downer P. Dykes, Lawrence, Kans., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Sept. 14, 1970, Ser. No. 24,966
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1

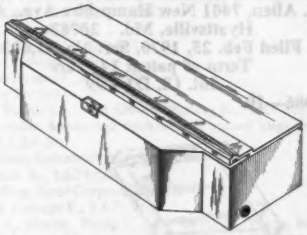


222,757
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Original design application Oct. 20, 1969, Ser. No. 19,631, now Patent No. 220,533, dated Apr. 20, 1971. Divided and this application Aug. 31, 1970, Ser. No. 24,770
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

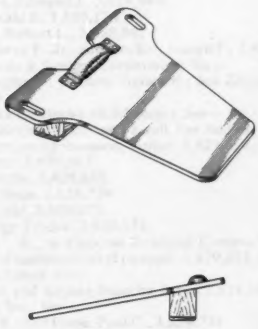
222,758
VEHICLE LAMP UNIT
Harris Vernon Hicks, 61 Ferndale Road, Lichfield, Staffordshire, England
Filed July 13, 1970, Ser. No. 23,911
Claims priority, application Great Britain Jan. 13, 1970
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



222,759
MACHINE FOR CUTTING AND SEALING PLASTIC SHEETING
Max Freeman, Great Neck, N.Y., assignor to Americana Craftsmen, Inc., Long Island City, N.Y.
Filed Aug. 24, 1970, Ser. No. 24,660
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



222,760
CARDIAC RESUSCITATOR
Stanley F. Meyer, 6598 Mount Ripley Drive, Buena Park, Calif. 90620
Filed May 5, 1970, Ser. No. 22,816
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

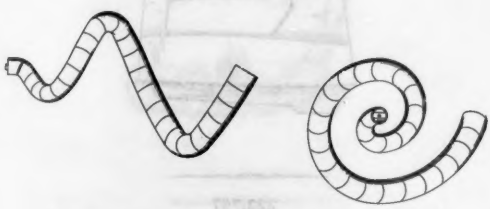


222,761
MEASURING CONTAINER FOR PEDIATRIC SOLUTION ADMINISTRATION
Robert Lewis Giles, Mundelein, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Mar. 30, 1970, Ser. No. 22,108
Term of patent 14 years
Int. Cl. D24—*05;* D9—*01*
U.S. Cl. D83—8

222,762
VANITY COMPACT
Louis E. Allen, 7401 New Hampshire Ave., Apt. 614, Hyattsville, Md. 20783
Filed Feb. 25, 1970, Ser. No. 21,623
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10

222,763
LACE TABLE CLOTH
Robert A. Padmore, Dunmore, Pa., assignor to The Scranton Corporation, Scranton, Pa.
Filed Apr. 9, 1970, Ser. No. 22,338
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D92—26

222,764
ADVERTISING SIGN OR SIMILAR ARTICLE
Leon Goldpaint, 11702 Dunning St., Santa Fe Springs, Calif. 90670
Filed Jan. 12, 1970, Ser. No. 20,867
Term of patent 14 years
Int. Cl. D20—*04*
U.S. Cl. D96—12



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

5 Day Division of Associated Products, Inc.: *See—*
Kahn, Rolf, 3,628,733.

A-T-O Inc.: *See—*
Grobowski, Ben T., 3,628,318.
Grobowski, Ben T., 3,628,396.

Aaron, Joseph E.: *See—*
Hardie, Waldo R.; and Aaron, Joseph E.,3,629,287.

AB Platmanufaktur: *See—*
Haggard, Nils Olof; Murne, Bertil Sven Oskar; and Jakobsen, Kjell Mosvoll, 3,628,688.

Abbott, Bernard J.: *See—*
Casida, Lester E., Jr.; and Abbott, Bernard J.,3,629,072.

Abbott, Frank R. Low inertia, high torque motors. 3,629,626, Cl. 310-49.

Abbott Laboratories: *See—*
Harnden, Michel Raymond, 3,629,276.
Jones, Peter Hadley, 3,629,232.

Abe, Kenji, to Kabushiki Kaisha Suwa Seikosha. Clubtooth lever escapement. 3,628,327, Cl. 58-116.

Abegg, Jean-Louis: *See—*
Kalopissis, Gregoire; and Abegg, Jean-Louis,3,628,544.

Abington Textile Machinery Works, Inc.: *See—*
Ramo, Oliver H., 3,628,213.

Abitibi Paper Company Ltd.: *See—*
Riem, Roland Hendrik; and Dwars, Wilhelmus Theodorus Albertus, 3,629,055.

Acre, Sydney R., to Midland-Ross Corporation. Power brake reaction mechanism. 3,628,422, Cl. 91-369.

Adachi, Kiyoshi: *See—*
Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunehiko,3,628,224.

Adams, Charles T., to Shell Oil Company. Catalyst impregnation method. 3,629,146, Cl. 252-435.

Adams, Hobart S. Precision long reach hole punch. 3,628,407, Cl. 83-140.

Adams, Thomas L.: *See—*
Stepanich, Fred C.; and Adams, Thomas L.,3,628,337.

Adams-Russell Co., Inc.: *See—*
Podell, Allen F., 3,629,733.

Adamski, Henry S.: *See—*
Jungjohann, Vernon H.; Adamski, Henry S.; and Richardson, Stephen M.,3,628,856.

Addressograph-Multigraph Corporation: *See—*
Deegan, James E., 3,628,977.

Addy, Leslie Ernest, to BP Chemicals (U.K.) Limited. Process for making isobutene polymerization catalyst from silica, aluminum alkyl and a halide. 3,629,150, Cl. 252-442.

Adlhoch, Richard H., to Motorola, Inc. Digital decoder. 3,629,847, Cl. 340-172.5

Advanced Patent Technology, Inc.: *See—*
Snaper, Alvin A.; and Farrell, Frank C., 3,628,601.
Snaper, Alvin A.; and Farrell, Frank C., 3,628,852.

Aepli, Otto T.: *See—*
Palmer, Frank W.; and Aepli, Otto T.,3,629,127.

Aerojet-General Corporation: *See—*
Baum, Kurt, 3,629,342.
Gold, Marvin H.; and Marcus, Henry J., 3,629,440.
Lawrence, Ralph W., 3,629,019.
Martin, Fred E., 3,629,338.
Nelson, Marvin L., 3,628,226.

Agazzi, Alberto; Broggi, Armando; Galli de Paratesi, Sergio; and Ghiurghi, Luciano, to European Atomic Energy Community (Euratom). Fluid control and safety rods for nuclear reactors. 3,629,059, Cl. 176-22.

Agencie Nationale de Valorisation de la Recherche, A.N.V.A.R.: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude, 3,629,697.

Agfa-Gevaert Aktiengesellschaft: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald, 3,628,952.
Riebel, Aexander; Himmelmann, Wolfgang; Meyer, Karl-Otto; and Van Veelen, George Frans, 3,628,961.
Taeffner, Klaus; and Luhrig, Hermann, 3,628,745.

Aichenegg, Paul C.; and Thornhill, Richard A., to Chemagro Corporation. Sulfinyl thiol- and dithio- phosphates. 3,629,375, Cl. 260-934.

Aichenegg, Paul C.: *See—*
Emerson, Carl D.; and Aichenegg, Paul C.,3,629,312.
Emerson, Carl D.; and Aichenegg, Paul C.,3,629,313.

Air Preheater Company, Inc., The: *See—*
Bakker, Lubertus, 3,628,665.

Air Products and Chemicals, Inc.: *See—*
Rohrberg, Roderick G.; and Harvey, Don E., 3,628,236.

Airco, Lynn, Inc., and: *See—*
Lynn, Charles L., Jr., 3,628,673.

Aizawa, Hideo: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.

Ajinomoto Co., Inc.: *See—*
Katsuya, Noboru; Sagara, Takaaki; Takahashi, Reiji; and Ojima, Takashi, 3,628,966.

Akaishi, Mineichi: *See—*
Uchisaka, Tsunehiko; and Akaishi, Mineichi,3,628,887.

Akamatsu, Kiyoshi; Hagihara, Takeaki; and Ishido, Teruhisa, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive compositions. 3,628,963, Cl. 96-115.

Akatu, Katutosi: *See—*
Toyoda, Kozo; and Akatu, Katutosi,3,628,241.

Akron Standard: *See—*
Clark, Fred E., 3,628,712.

Aktiebolaget Electrolux: *See—*
Liljendahl, Sven Algot Joel, 3,628,194.
Nilsson, Arne Lennart, 3,628,882.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Sattler, Gunter; and Weimann, Klaus, 3,628,294.

Akutagawa, Takaichi: *See—*
Watanabe, Takeshi; Yoshida, Masatsugu; Akutagawa, Takaichi; and Noguchi, Shiro,3,629,387.

Akzona Incorporated: *See—*
Gardner, James H., 3,629,365.

Alberto-Culver Company: *See—*
Schmitt, William H., 3,629,398.

Alburn, Harvey E.: *See—*
Fenichel, Richard L.; and Alburn, Harvey E.,3,629,391.

Alibrandi, Gaetano. Space-age necktie and button engaging fastener. 3,628,220, Cl. 24-56.

Allegheny Ludlum Industries, Inc.: *See—*
Lajoie, Peter A., 3,629,664.

Allegheny Ludlum Steel Corporation: *See—*
Seitanakis, George P., 3,629,760.

Allen, Robert J.; Martin, Philip C.; and Urbonas, Vacys, to Ex-Cell-O Corporation. Liquid filling machine with automatic filler volume adjustment control. 3,628,698, Cl. 222-168.

Allen, Roy A.; and Somerville, George R., to Shell Oil Company. Two-package epoxy-urethane coating composition. 3,629,167, Cl. 260-18.

Allen-Bradley Company: *See—*
Walters, Ronnie G., 3,629,705.

Allied Chemical Corporation: *See—*
Beauchamp, William D.; Port, Eugene B.; and Howard, Carlton J., 3,628,919.
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, 3,629,255.
Degginger, Edward R.; and Balquist, James M., 3,629,337.
Largman, Theodore; and Newallis, Peter Edward, 3,629,459.
Newallis, Peter E., 3,629,280.
Rumanowski, Edmund J., 3,628,944.
Shriver, Donald S., 3,629,176.
Stephenson, Robert L., 3,628,862.
Stewart, Aubrey P., Jr.; and Stecker, Joseph F., 3,628,972.

Allied Management & Systems Corporation: *See—*
Dancis, Douglas E.; Dorfuss, Gerald E.; and Zitron, Benjamin C., 3,629,844.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Andersson, Herbert Olof; and Ekwall, Per Anders, 3,629,066.
Helge, Anders; and Johansson, Torkel, 3,629,658.
Hessen, Petter, 3,629,687.
Johansson, Arne, 3,629,685.
Lundstrom, Hans, 3,628,779.
Thorborg, Kjeld, 3,629,673.
Trolin, George Teodor, 3,629,531.

Allphin, Nylen L., Jr., to Chevron Research Company. Reduction of sulfur activity of sulfurized alkyl phenols. 3,629,225, Cl. 260-137.

Allport, Maurice James: *See—*
Wiley, David; and Allport, Maurice James,3,629,597.

Alpha Industries, Inc.: *See—*
King, Philip E.; and Finne, Paul C., 3,629,732.

Alpura AG: *See—*
Loliger, Willi; and Schmied, Rudolf, 3,628,573.

Altfeld & Co. GmbH: *See—*
Altfeld, Hans; and Sauter, Ewald, 3,629,540.
Altfeld, Hans; and Sauter, Ewald, to Altfeld & Co. GmbH. Spark erosion head with means for rotating and gyrating the electrode. 3,629,540, Cl. 219-69.
Altralite, Inc.: *See—*
Loupe, Richard H., 3,629,632.
Amato, Ernest J., to Kidde, Walter, & Company, Inc. Turbulence compensate d ultrasonic intruder detector. 3,629,812, Cl. 340-1.
American Air Filter Company, Inc.: *See—*
Norton, John P., 3,628,737.
American Can Company: *See—*
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William, 3,629,385.
Fry, Franklin Hornor, 3,629,546.
Groasdale, William Herbert; and Johnson, Donald Owen, 3,628,307.
Rouse, John Wilson, 3,628,650.
American Cyanamid Company: *See—*
Coleman, Denis, 3,629,207.
Grayson, Martin, 3,628,910.
Lindsley, John Francis; and Sanborn, William Eugene, 3,629,152.
Marks, Alfred Finlay, 3,628,941.
Weinberg, Norman Louis, 3,629,080.
American Home Products Corporation: *See—*
Bell, Stanley C.; and Wei, Peter H. L., 3,629,262.
Fenichel, Richard L.; and Alburn, Harvey E., 3,629,391.
Hussain, Anwar A., 3,629,425.
American Optical Corporation: *See—*
Everburg, Donald E., 3,628,215.
Hovey, Richard J., 3,629,130.
Polanyi, Michael L.; and Ostrowski, David S., 3,628,525.
Shatzel, Norman W., 3,628,411.
Snitzer, Elias, 3,629,723.
American Safety Equipment Corporation of Michigan: *See—*
Molitoris, Stephen J., 3,628,190.
American Standard Inc.: *See—*
Knebusch, George R., 3,628,590.
Merrill, Bennett W., 3,628,626.
American Velcro, Inc.: *See—*
Erb, George H., 3,629,032.
AMP Incorporated: *See—*
Brown, Christopher Kingsley; and Over, William Roderick, 3,628,202.
Collier, John Covell; and Rickards, David William, 3,629,748.
Gluntz, Glenn Harlan, 3,629,803.
Gorjat, Jean, 3,629,810.
Kourimsky, Fritz, 3,629,794.
Mixon, James Lenhart, Jr., 3,629,488.
Pauza, William Vito, 3,628,483.
Van de Kerkhof, Lodevicus Lambertus Johannes, 3,628,228.
Ampex Corporation: *See—*
Dolby, Dale P., 3,629,515.
Wolf, Irving W.; Lienhard, Heinz; and Levitsky, Moses I., 3,629,388.
Anacon, Inc.: *See—*
Brady, Tyson H., 3,628,867.
Anchor Hocking Corporation: *See—*
Schweickart, Jay F., 3,628,671.
Anchor Hooking Corporation: *See—*
Cotter, James F., 3,628,658.
Andersen, Howard P. Hygroscopically controlled effervescent mouthwash tablet. 3,629,468, Cl. 424-44.
Anderson Electric Corporation: *See—*
Peek, Vernon E., 3,629,805.
Anderson, Frederick N.; and Miller, Ralph L., to Bell Telephone Laboratories, Incorporated. Error reduction logic network for harmonic measurement system. 3,629,510, Cl. 179-15.
Anderson, Howard A., to Baychem Corporation, mesne. Link members and endless chains especially for tracked vehicles. 3,628,834, Cl. 305-35.
Anderson, John E.; Parish, Clyde E.; and Ross, George H., to Signal Companies, Inc., The. Amino thiocarbonate adducts and method of making same. 3,629,311, Cl. 260-455.
Anderson, John M., to General Electric Company. High performance current transformers. 3,629,693, Cl. 323-6.
Anderson, Robert M., to Ledex Inc. Interrupter switch for rotary solenoid. 3,629,745, Cl. 335-122.
Andersson, Herbert Olof; and Ekwall, Per Anders, to Allmanna Svenska Elektriska Aktiebolaget. Fuel assembly for nuclear reactors and helical spacers hose bundles of fuel pins. 3,629,066, Cl. 176-76.
Andersson, Robert Bert: *See—*
Magnusson, Ingemar Arnold; Marklund, Per Tage; Broddner, Sven Malte; Ax, Lars; and Andersson, Robert Bert,3,628,457.
Andis, Allen Richard. Omni-directional fluid-control valve. 3,628,570, Cl. 137-625.23
Ando, Masao, to Chisso Corporation. Controlling heat generation locally in a heat generating pipe utilizing skin effect current. 3,629,551, Cl. 219-300.
Andreaggi, Joseph R.; and Zenuch, George, to Weston Instruments, Inc. Electrical connector device. 3,629,808, Cl. 339-126.
Andrews, Mena G.: *See—*
Noyes, Richard C.; and Andrews, Mena G.,3,629,061.
Andrews, Ronald A., to United States of America, Navy. Means and method for optical parametric up-con- version of IR images. 3,629,603, Cl. 307-88.3
Andvig, Tore Anton, to A/S Kongsberg Vapenfabrik. Arrangement for endwise clamping together the hubs of two sections of a gas turbine rotor. 3,628,886, Cl. 416-183.
Angelbeck, John A., Jr., to Pack-Rite Packaging & Crating Co., Inc. Plastic pallet with reinforcing members. 3,628,468, Cl. 108-51.
Anthony, Albert M., to Tractor, Inc. Convergence unit for color television picture tube. 3,629,752, Cl. 335-212.
Antonen, Robert C., to Dow Corning Corporation. Solvent-free liquid organosilicon resins. 3,629,297, Cl. 260-37.
Antonucci, Joseph M.: *See—*
Wall, Leo A.; and Antonucci, Joseph M.,3,629,340.
Apikos, Dominic: *See—*
Kremer, Charles J.; and Apikos, Dominic,3,629,171.
Apotheker, David; and Hirsty, Sylvain M., to Du pont de Nemours, E. I., and Company. Thioperoxydiphosphates and copper salts as vulcanization accelerators. 3,629,210, Cl. 260-79.5
A.P.V. Company Limited, The: *See—*
Townsend, Alexander Arthur, 3,628,687.
Arai, Kiyoyuki: *See—*
Takayama, Masoa; and Arai, Kiyoyuki,3,628,433.
Arai, Masakazu: *See—*
Masuda, Kohei; Uchigaki, Taku; and Arai, Masakazu,3,629,037.
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro, to Tokyo Keiki Seizosho Co., Ltd. Multi-channel signal processing system. 3,629,856, Cl. 340-172.5
Arakawa, Morimasa; Katanosaka, Akisato; and Chikazawa, Masafumi, to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha. Process for manufacturing polymers of dicyclopentadiene derivatives. 3,629,221, Cl. 260-93.1
Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha: *See—*
Arakawa, Morimasa; Katanosaka, Akisato; and Chikazawa, Masafumi, 3,629,221.
Takahashi, Shonosuke; and Tanaka, Mitsuo, 3,629,166.
Arasaki, Seitetsu; Wakimura, Atsushi; Yamamoto, Hisao; and Inaba, Shigeho, to Sumitomo Chemical Company, Ltd. Novel glucuronides of 3-indolylaliphatic acid derivatives. 3,629,238, Cl. 260-234.
Archaux, Francois: *See—*
Bouthors, Pierre; and Archaux, Francois,3,629,570.
Archer, Jean, to Cycles Peugeot. Handling truck. 3,628,805, Cl. 280-33.99
Archer, Norman E.: *See—*
Wenger, Harvey M.; and Archer, Norman E.,3,628,666.
Ardussi, Wallace F.; and Curtis, Herbert F., to Auer Register Company, The. Register assembly with a movable front panel. 3,628,441, Cl. 98-40.
Argonudelis, Alexander D.; De Boer, Clarence; Eble, Thomas E.; and Herr, Ross R., to Upjohn Company, The. Sparsogenin and sparsogenin A and methods of preparation. 3,629,406, Cl. 424-118.
Argus Chemical Corporation: *See—*
Minagawa, Motonobu; and Nakagawa, Kenichi, 3,629,189.
Arimura, Mashahiro, to Gakken Co., Ltd. Amphibian toy. 3,628,286, Cl. 46-247.
Armco Steel Corporation: *See—*
Fritzsche, Alfred O., 3,628,742.
Armour, Donald F., to Monsanto Company. Cap with safety shield. 3,628,679, Cl. 215-9.
Armour Pharmaceutical Company: *See—*
Bossinger, Charles D.; and Enkoji, Takashi, 3,629,467.
Armstrong, David Roger: *See—*
Vincent, Samuel Anderson; Monds, Fabian Charles; and Armstrong, David Roger,3,628,538.
Armstrong, Jack W., to Lipe Rollway Corporation. Damper assembly for drive train. 3,628,353, Cl. 64-27.
Arneson, Norman M.: *See—*
Jacobson, Sylvester O.; and Arneson, Norman M.,3,628,306.
Arnold Engineering Company, The: *See—*
Stone, John James, ,000,00!.
Arnold, Ted A., to Vacu-Blast Corporation. Silencer for air-blasting gun. 3,628,627, Cl. 181-36.
Aronow, Martin L.; and Rehse, Denis, to Bulova Watch Company, Inc. Electrical pressure transducer for high-temperature fluid systems. 3,628,381, Cl. 73-398.
Artz, Frank, Sr. Combined tie and shirt. 3,628,192, Cl. 2-130.
Arvisenet, Jacques, to Sidel, Societe Anonyme. Apparatus for regularly re-grouping and distributing objects from different origins on a lead-out conveyor. 3,628,649, Cl. 198-32.
A/S Kongsberg Vapenfabrik: *See—*
Andvig, Tore Anton, 3,628,886.
Hals, Thorbjorn, 3,628,883.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Akamatsu, Kiyoshi; Hagihara, Takeaki; and Ishido, Teruhisa, 3,628,963.
Satake, Kunio; Sone, Tomiho; and Hamada, Minoru, 3,629,038.
Ash, Alvin G. Method for forming a mandrel and fabricating a duct thereabout. 3,629,030, Cl. 156-189.
Ashland Oil & Refining Company: *See—*
Tushaus, Leonard A., 3,629,160.
Ashland Oil, Inc.: *See—*
McKillip, William J.; and Impola, Clarence N., 3,628,992.

Aspro-Nicholas Limited: *See—*
Gittos, Maurice Ward; James, John William; and Wiggins, Leslie Frederick, 3,629,463.
Atara Corporation: *See—*
McConnel, Christopher W.; and Slater, Robert W., 3,628,775.
Ates Componenti Elettronici S.p.A.: *See—*
Del Zotto, Giorgio, 3,629,649.
Soardi, Italo; and Pagani, Giancarlo, 3,629,497.
Atlantic Richfield Company: *See—*
Borwnscombe, Eugene R.; Campbell, William M.; and Riggs, Emmet D., 3,629,796.
Divijak, Joseph M., Jr., 3,629,096.
Gower, Howard D.; Gower, Bob G.; and Young, David W., 3,629,112.
Hearn, Daniel P., 3,629,694.
Kremer, Charles J.; and Apikos, Dominic, 3,629,171.
Sun, Jui-Yuan, 3,629,294.
Atlas Chemical Industries, Inc.: *See—*
Nelson, Richard G., 3,628,455.
Atomic Energy of Canada Limited: *See—*
Wright, James R., 3,629,069.
Audesse, Emery; and Cookson, Robert Wilbur, to Sylvania Electric Products, Inc. Lamp base. 3,629,640, Cl. 313-318.
Audi NSU Auto Union Aktiengesellschaft: *See—*
Lechler, Rolf; and Leitermann, Wulf, 3,628,900.
Auer, Adolf, to Bremshey Aktiengesellschaft. Air-sprung seat for vehicles. 3,628,763, Cl. 248-400.
Auer Register Company, The: *See—*
Ardussi, Wallace F.; and Curtis, Herbert F., 3,628,441.
Automatic Equipment Development Corporation: *See—*
Cattey, Edward P.; Poturnicki, Raymond H.; Johnston, James J.; and Bedard, Walter J., 3,629,662.
Automobiles Peugeot: *See—*
Bouthors, Pierre; and Quemerais, Philippe, 3,628,388.
Bouthors, Pierre; and Archaux, Francois, 3,629,570.
Lombard, Claude, 3,628,767.
Perrin, Jean-Louis; and Milliot, Henri, 3,628,516.
Ax, Lars: *See—*
Magnusson, Ingemar Arnold; Marklund, Per Tage; Broddner, Sven Malte; Ax, Lars; and Andersson, Robert Bert,3,628,457.
Axthammer, Ludwig, to Fichtel & Sachs Aktiengesellschaft. Extendable support column. 3,628,637, Cl. 188-300.
Ayerst, McKenna and Harrison Limited: *See—*
Lippmann, Wilbur, 3,629,445.
Azinger, Frederick A., Jr.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A.,3,629,553.
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, to Japanese National Railways, Mitsubishi Electric Corporation, and Sumitomo Electric Industries, Ltd. Moving object communication control system. 3,629,707, Cl. 325-53.
Babee, Alexander. Climbing concrete form hoist. 3,628,223, Cl. 25-131.
Babunovic, Momir, to Barry-Wehmiller Company. Container compressive load testing apparatus. 3,628,379, Cl. 73-94.
Babunovic, Momir; and Stapf, Virgil Melvin, to Barry-Wehmiller Company. Transparent container inspection apparatus. 3,629,595, Cl. 250-223.
Bachman, John D. Automatic spool valve. 3,628,556, Cl. 137-106.
Bachman, Paul L., to Merck & Co., Inc.Preparation of imidazoline compounds by pyrolysis of N,N'-diacylalkylenediamines. 3,629,278, Cl. 260-309.6
Back, Sangho E.; and Murdock, Gordon A., to Crown Zellerbach Corporation. Electrographic printing element. 3,629,000, Cl. 117-218.
Backofen, Hans-Dieter: *See—*
Kaether, Willy; and Backofen, Hans-Dieter,3,629,002.
Kaether, Willy; Dietzel, Walter; and Backofen, Hans-Dieter,3,629,001.
Badalex Limited: *See—*
Zollman, Peter M., 3,628,242.
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William, to American Can Company. Method of forming a container neck. 3,629,385, Cl. 264-154.
Bader, Henry; and Ferrari, John L., to Polaroid Corporation. Process for producing 6-halo-4- azabenzimidazoles and intermediates therefor. 3,629,272, Cl. 260-296.
Bader, Jorg; and Gatzi, Karl, to Ciba-Geigy Corporation. 3-Aryliminо-4-chloro-5-amino-1,2-dithiols. 3,629,252, Cl. 260-247.1
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Eilingsfeld, Heinz; and Scheuermann, Horst, 3,629,254.
Nohe, Heinz, 3,629,291.
Sander, Bruno; Pommer, Ernst-Heinrich; Clad, Werner Helmut; and Wittmann, Otto, 3,629,466.
Bahl, James Melvin, to Deere & Company. Hydraulic control valve. 3,628,558, Cl. 137-118.
Bailey, Donald L.; and Jex, Victor B., to Union Carbide Corporation. Organosilicon compounds and processes for producing the same. 3,629,309, Cl. 260-448.2
Bailey, Donald L.; and O'Connor, Francis M., to Union Carbide Corporation. Organo-siloxane-oxyalkylene block copolymers. 3,629,310, Cl. 260-448.8
Bailey, Donald L.; and Pater, Anton S., to Union Carbide Corporation. Siloxand-oxyalkylene block copolymers. 3,629,308, Cl. 260-448.2
Bailey, James A.; and Turner, Harry E. Vehicle cover. 3,628,827, Cl. 296-137.
Bailey, John M., to Caterpillar Tractor Company. Combustion gas seal. 3,628,427, Cl. 92-144.
Baker, Joseph W.; and Howe, Robert K., to Monsanto Company. Nematocides. 3,629,448, Cl. 424-304.
Bakewell, David, to Courtaulds North America Inc. Pirn cap. 3,628,747, Cl. 242-118.32
Bakker, Lubertus, to Air Preheater Company, Inc., The. Floating oil containment apparatus. 3,628,665, Cl. 210-242.
Baldwin, D. H., Company: *See—*
Bunger, David A., 3,629,481.
Harris, Michael R., 3,629,480.
Baldwin, Roger A.; and Cheng, Ming T., to Kerr McGee Chemical Corporation, mesne. Bis(azidophosphoranes). 3,629,296, Cl. 260-349.
Baldwin, William C.; and Meyer, Theodore N., to Plasmachem, Inc. Outboard motor attachment. 3,628,492, Cl. 115-17.
Balitrand, Georges; Mison, Andre; Roget, Jean; and Tarbouriech, Philippe, to Rhone-Poulenc S.A. Process and apparatus for the continuous preparation of a spinnable solution of acrylonitrile polymers. 3,629,217, Cl. 260-88.7
Ball Corporation: *See—*
Fogelberg, Clement V.; and Erickson, Lowell H., 3,629,382.
Balogh, Roy, to Mc Cabe-Powers Body Company. Pole guide. 3,628,675, Cl. 214-3.
Balquist, James M.: *See—*
Degginger, Edward R.; and Balquist, James M.,3,629,337.
Ban, Itsuki. Apparatus for shifting magnetic head in multi-track tape player. 3,628,796, Cl. 274-4.
Ban, Itsuki. Tape cartridge positioning apparatus. 3,628,797, Cl. 274-4.
Bang, Mogens W., to Stackpole Carbon Company. Linear motion variable resistor with carbon and spring metal contacts. 3,629,778, Cl. 338-183.
Bangor Punta Operations, Inc.: *See—*
Taccone, Russell M., 3,628,592.
Banikiotes, Gregory Christ: *See—*
Meisler, Joseph; Van Baush, Edward Harold; and Banikiotes, Gregory Christ,3,628,340.
Banker, Gilbert S.; and Goodman, Harris. Entrapment compositions and processes. 3,629,392, Cl. 424-22.
Banner, Philip M. Trim tab means for marine craft. 3,628,484, Cl. 114-66.5
Baran, John S.; and Laos, Ivar, to Searle, G. D., & Co.17α-Alkynyl-11β,13β-dialkylgona-1,3,5(10)- triene-3,17-diol 3-cycloalkyl ethers, compositions and method. 3,629,304, Cl. 260-397.5
Baranauckas, Charles F.: *See—*
Frank, Arlen W.; and Baranauckas, Charles F.,3,629,326.
Barber, Mark R.; and Fisher, Reed E., to Bell Telephone Laboratories, Incorporated. Reflection type digital phase shifter. 3,629,739, Cl. 333-31.
Barger, Charles H.: *See—*
Thiele, William C.; Barger, Charles H.; Thomas, Joseph J.; and Hucks, Robert T., Jr.,3,628,991.
Barker, James E., to Cities Service Company. Preparation of a cupric hydroxide-phosphorous complex. 3,628,920, Cl. 23-315.
Barnes, Alice Cheryl: *See—*
Waterbury, Walter Edward; Barnes, Alice Cheryl; and Walchli, Herman Henry, Jr.,3,629,397.
Barnes, Frank, Jr. Compression mechanism and post binder incorporating the same. 3,628,877, Cl. 402-17.
Barr, Fred S.; Bullock, Charles F.; and Collins, Galen F., to Massengill, S. E., Company, The. Antifungal and antibacterial composition. 3,629,454, Cl. 424-320.
Barrett, Paul Anthony, to Burroughs Wellcome Co. Method of treating or preventing coccidiosis with thiosemicarbazone derivatives. 3,629,416, Cl. 424-248.
Barry-Wehmiller Company: *See—*
Babunovic, Momir, 3,628,379.
Babunovic, Momir; and Stapf, Virgil Melvin, 3,629,595.
Bartelink, Everhard H. B., to Northeast Electronics Corporation. Method and apparatus for measuring delay distortion including simultaneously applied modulated signals. 3,629,696, Cl. 324-57.
Barten, Piet Gerard Joseph; and VanNes, Johannes Cornelis Adrianus, to U.S. Philips Corporation. Exposure device for manufacturing colour picture tubes. 3,628,429, Cl. 95-1.
Bartholomew, Robert W. Mower safety device. 3,628,315, Cl. 56-10.5
Bartlett, Peter G.: *See—*
Clark, Larry K.; Bartlett, Peter G.; and Hill, Frank W.,3,629,802.
BASF Wyandotte Corporation: *See—*
Palmer, Frank W.; and Aepli, Otto T., 3,629,127.
Bastian, Lehyman J.; and Shuman, Clyde W., Jr., to Scott Paper Company. Dispensing cabinet for sheet material. 3,628,743, Cl. 242-55.3
Battista, Orlando A., to FMC Corporation. Microcrystalline collagen, an ionizable partial salt of collagen and foods, pharmaceuticals and cosmetics containing same. 3,628,974, Cl. 106-125.
Batzer, Hans: *See—*
Lohse, Friedrich; Schmid, Rolf; and Batzer, Hans,3,629,226.
Batzer, Hans; Habermeir, Juergen; and Porret, Daniel, to Ciba Limited. Diglycidyl ethers. 3,629,263, Cl. 260-257.
Baum, Kurt, to Aerojet-General Corporation. Synthesis of fluorodinitromethane. 3,629,342, Cl. 260-644.
Baumgartner, Frederick N., to United States of America, Army, mesne. Inactivation of metal deactivators in gasoline. 3,628,927, Cl. 44-7.

Baumgartner, Werner R.; and Kaufmann, Hans P., to Bulova Watch Company, Inc. Miniaturized electronic watch. 3,628,323, Cl. 58-23.

Baxter Laboratories, Inc.: *See—*
Cayle, Theodore, 3,629,073.
Miranda, Victor Eduardo Vasquez, 3,628,872.

Baychem Corporation: *See—*
Anderson, Howard A., 3,628,834.

Bayless, Robert G.; Emrick, Donald D.; and Hart, Ronald L., to National Cash Register Company, The. Water solubilization of vanadyl-hardened poly(vinyl alcohol) films useful as capsule wall material. 3,629,140, Cl. 252-316.

Baynes, William R.; Hiltpold, John P.; and Staats, William A., to Mattel, Inc. Toy battery charger. 3,629,680, Cl. 320-2.

Baynes, William R.: *See—*
Soulakis, George; Baynes, William R.; and La Branche, Harvey W.,3,628,284.

Beals, Charles D.; Fitzpatrick, George I.; and O'Hara, Kim L., to Esso Research and Engineering Company. Apparatus for production of polyethylene. 3,628,918, Cl. 23-284.

Beard, John H., to Taylor Manufacturing Company. Article combiner. 3,628,647, Cl. 198-30.

Beard, William Q., Jr., to Ethyl Corporation. Halogenated hydrocarbons. 3,629,354, Cl. 260-683.3

Beatrice Foods Co.: *See—*
Noznick, Peter P.; and Tatter, Charles W., 3,628,968.

Beauchamp, William D.; Port, Eugene B.; and Howard, Carlton J., to Allied Chemical Corporation. Crystallization procedure for sodium carbonate precursor crystals. 3,628,919, Cl. 23-301.

Beck, Bjorn O.: *See—*
Mc Wethy, Irvin E.; and Beck, Bjorn O.,3,628,565.

Beck, Gunther; and Holtschmidt, Hans, to Farbenfabriken Bayer Aktiengesellschaft. Chloropyrimidine derivatives. 3,629,261, Cl. 260-251.

Becker, Alfred Otto. Electrical resistance welding of coated sheet metals. 3,629,544, Cl. 219-93.

Becker, Erwin Willy, to Gesellschaft fur Kernforschung mbH. Method and device for the generation of beams of matter with sharp spatial collimation. 3,628,342, Cl. 62-23.

Becker, Ronald F.; Hanna, Ralph T.; and Waterhouse, Ernest L., to United States Steel Corporation. Fabricated blast furnace cooling plate. 3,628,509, Cl. 122-6.5

Beckman Instruments Inc.: *See—*
Durland, Douglas H., 3,629,710.
Gilbert, Paul T., 3,628,373.
Paulson, Gerald L., 3,628,682.
Porter, Joe A., 3,628,339.

Becton, Dickinson Electronics Company: *See—*
Shoor, Bernard A., 3,629,773.

Bedard, Walter J.: *See—*
Cattey, Edward P.; Poturnicki, Raymond H.; Johnston, James J.; and Bedard, Walter J.,3,629,662.

Bedighian, Leon B., to Vistron Corporation. Water-modified polyester compositions. 3,629,169, Cl. 260-22.

Beg, Zafarul Hasan: *See—*
Siddiqi, Majid; and Beg, Zafarul Hasan,3,629,449.

Behr, Heinrich, to Gewerkschaft Eisenhutte Westfalia. Support assemblies for mineral mines. 3,628,335, Cl. 61-45.

Behringwerke Aktiengesellschaft: *See—*
Mauler, Rudolf; and Gruschkau, Horst, 3,629,399.

Behymer, Donald G. Television lead-in wire connector. 3,629,804, Cl. 339-9.

Beightol, Leroy E., to Solar Laboratories, Inc. Thermistor and method of making. 3,629,772, Cl. 338-28.

Belden, Dallas J. B. Milking unit sanitizer. 3,629,005, Cl. 134-171.

Bell & Howell Company: *See—*
Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R., 3,628,753.
Dann, Bert H.; and Gardner, Floyd M., 3,629,491.

Bell, Harvey: *See—*
Vilim, Robert P.; and Bell, Harvey,3,628,969.

Bell Punch Company Limited: *See—*
Drage, James John; and Kitz, Norbert, 3,629,564.

Bell, Stanley C.; and Wei, Peter H. L., to American Home Products Corporation. Process for preparing 4-phenylquinazolines. 3,629,262, Cl. 260-251.

Bell Telephone Laboratories, Incorporated: *See—*
Anderson, Frederick N.; and Miller, Ralph L., 3,629,510.
Barber, Mark R.; and Fisher, Reed E., 3,629,739.
Brune, William L., 3,629,741.
Chow, Woo F., 3,629,862.
Chun, Ping Sun, 3,629,725.
Dimmick, James Owen; Lewis, Theras Gordon; and O'Neill, John Francis, 3,629,839.
Earp, Ronald Lee, 3,629,714.
Feiner, Alexander, 3,629,513.
Glaser, Arthur B., 3,629,509.
Hirsch, Donald; and Meadors, Howard Clarence, Jr., 3,629,736.
Pedersen, Richard Alan; Reed, Ray Allen; and Underwood, Milton Dean, 3,629,609.
Pohl, Karl-Heing; Spencer, Arthur G.; and Westover, Robert F., 3,628,243.
Scheinman, Arnold Herbert, 3,629,843.
Taylor, Frank Finley, 3,629,842.
Thompson, John Stewart, 3,629,846.
Ulrich, Werner, 3,629,851.
Wilson, James, 3,629,787.
Wolf, Richard B., 3,629,511.

Beller, Hans Albert; and Burgdorf, Jochen, to International Telephone and Telegraph Corporation. Spot-type disc brake. 3,628,636, Cl. 188-73.4

Bellinger, Horst: *See—*
Nosler, Heinz Gunter; Bellinger, Horst; and Wessendorf, Richard,3,629,464.

Beloit Corporation: *See—*
Forrest, George, 3,629,056.
McKie, Thomas G., 3,629,057.

Bemont, Elliott T. Cigarette holder and filter tube. 3,628,543, Cl. 131-207.

Bender, Alfred; and Hornig, Horst A., to ITT Industries, Inc. Power control valve. 3,628,567, Cl. 137-596.13

Bender, Norman A., to General Electric Company. Method and apparatus for treating magnetic windings. 3,628,240, Cl. 29-596.

Bendix Corporation, The: *See—*
Brown, Ralph V., 3,629,674.
Carrico, John P.; and McGinnis, Patrick F., 3,629,573.
Coggin, James R., 3,629,558.
Ferguson, John H., Jr.; and Woodruff, Frank, 3,628,894.
Klein, Bruce W., 3,629,814.
Linkroum, Irving E., 3,629,651.
Mayer, Endre A., 3,628,549.
Mayer, Endre A.; and Frericks, Donald E., 3,628,551.
Mueller, Rolf K., 3,628,866.
Normann, Richard W., 3,629,791.
Pauwels, Edward M.; Ritsema, Irving M.; and Suttle, Ward C., 3,629,635.
Rachel, Todd L., 3,629,598.
Strole, John C.; Szerenyi, Laszlo I.; and Moreines, Harold, 3,629,711.
Sulich, Janusz S., 3,628,774.
Walters, William J.; Rusnack, John G.; and Chen, Peter P. D., 3,629,535.

Benedikter, Kurt; Hagel, Karl Otto; and Kiepert, Klaus, to Chemische Werke Huls A.G. Reactivation of Ziegler-type catalysts. 3,629,212, Cl. 260-80.78

Benford, Konrad H., to Bowles-Benford. Acoustical signal generator. 3,628,499, Cl. 116-137.

Benko, Pal; Pallos, Laszlo; Vaczi, Lajos; Komlos, Endre; and Ordogh, Ferenc, to Egyesult Gyogyszer-es Tapszergyar. Substituted guanylformamidines. 3,629,334, Cl. 260-565.

Bennett, Charles H. Automatic trim attachment for power boats. 3,628,486, Cl. 114-6.5

Bennett, Charles H. Hydraulically operated trim attachment for power boats. 3,628,487, Cl. 114-66.5

Bennett, Roswell J., to Union Carbide Corporation. Auxiliary component package for oxygen-metal batteries. 3,629,009, Cl. 136-86.

Berenbaum, Arthur; and McDonough, Robert M., to Philco-Ford Corporation. Door structure. 3,628,288, Cl. 49-109.

Berg, Kenneth D. Mobile radial arm saw and saw table. 3,628,578, Cl. 143-6.

Beringer, Monique: *See—*
Buchmann, Paul; Egri, Laszlo; and Beringer, Monique,3,628,541.

Berky, John J.: *See—*
McClure, Bill M.; Berky, John J.; and Savage, George R.,3,629,639.

Bernard Folay SA: *See—*
Berney, Jean Claude, 3,629,727.

Bernard, Georges, to Merlin Gerin, Societe Anonyme. Balanced bridge optical transmission telemetering device for measuring an electrical quantity associated with a power line with an independent optical balancing system. 3,629,703, Cl. 324-96.

Bernard Golay S.A.: *See—*
Berney, Jean-Claude, 3,629,743.

Bernard, Jean Louis, to Schlumberger Technology Corporation. Apparatus for dampening erratic vertical movements of well tools. 3,628,606, Cl. 166-241.

Bernardi, Luigi; and Pallini, Ugo, to Societa Farmaceutici Italia. Stabilized compositions of alkaline metal salts of estrogen sulphates. 3,629,305, Cl. 260-397.4

Berndt, Wilbur C.; and Hardenbrook, Harry J. Self-retaining cold wrap. 3,628,537, Cl. 128-402.

Berney, Jean Claude, to Compagnie des Montres Longines, Francillion S.A., and Bernard Folay SA. Circuit for sustaining oscillation of a resonator by a frequency above the natural frequency of said resonator. 3,629,727, Cl. 331-117.

Berney, Jean-Claude, to Compagnie des Montres Logines Fracillon S.A., and Bernard Golay S.A. Oscillating system with means for frequency variation thereof. 3,629,743, Cl. 334-89.

Berrer, Dagmar; and Vogel, Christian, to Geigy Chemical Corporation. Herbicidal 2-alkylthio-4,6-diamino-s- triazines. 3,629,256, Cl. 260-249.8

Berrer, Dagmar; and Vogel, Christian, to Geigy, J. R., A.G. 2-Chloro-4-tert-butylamino-6-cyclopropylamino-s- triazine. 3,629,257, Cl. 260-249.8

Berrer, Dagmar; and Vogel, Christian, to Geigy Chemical Corporation. Herbicidal 4-methoxy-2,6-diamino-s-triazines. 3,629,258, Cl. 260-249.8

Bertin, Daniel; and Nedelec, Lucien, to Roussel-UCLAF. 16,17-Isoxazolino-Δ-1,3,5(10)-gonatrienes. 3,629,245, Cl. 260-239.55

Besson, Rene: *See—*
Chopard, Remy; and Besson, Rene,3,628,324.

Best, Aaron R.: *See—*
Osrowsky, Efrem; Heffernan, Bart T.; and Best, Aaron R.,3,628,535.

Betz, Clarence S.: *See—*
Kohus, Francis E., 3,628,784.

Beverage Air Company: *See—*
Buffington, Herman L.; and Stribling, Robert M., 3,628,289.

Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, to Allied Chemical Corporation. Fluorocarbon esters of isocyanurate. 3,629,255, Cl. 260-248.

Bicyce bake: *See—*
Meeks, Albert D., 3,628,633.

Biddison, John M.; and Donnaker, Clarence W., to Globe Tool and Engineering Company, The. Automatic armature winding machine. 3,628,229, Cl. 29-205.

Bier, Gerhard; Trautvetter, Werner; and Weisgerber, Gregor, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of polyvinyl fluoride having low K-values. 3,629,218, Cl. 260-92.1

Bigliano, Robert P., to Du Pont de Nemours, E. I., and Company. Physiologic fluid pressure sensor head. 3,628,526, Cl. 128-2.05

Bil, Milos S.: *See—*
Brody, Frederick; Halasz, Alexander; and Bil, Milos S.,3,629,330.

Billett, Ronald J., to FMC Corporation. Method of and apparatus for detecting an opaque object in a translucent substance. 3,628,657, Cl. 209-111.7

Bilotta, Joseph A. Fire alarm device. 3,628,494, Cl. 116-102.

Bindler, Jakob: *See—*
Model, Ernst; and Bindler, Jakob,3,629,477.

Bio-Dynamics, Inc.: *See—*
Budrose, Charles R., 3,628,257.

Bio-Logics, Inc.: *See—*
Larson, Roger V., 3,628,722.

Biorex Laboratories Limited: *See—*
Hough, Leslie; Turner, John Cameron; and Lewis, Anthony William, 3,629,231.

Birkhaug, Frederic John: *See—*
Marino, Morris Anthony; Birkhaug, Frederic John; and Sadek, George Edward,3,629,307.

Birmingham Small Arms Company Limited, The: *See—*
Blair, Gordon Purves; and Johnston, Mervyn Bradshaw, 3,628,518.

Birtwistle, Harold, to Lucas, Joseph, (Industries) Limited. Lamp failure warning systems. 3,629,799, Cl. 340-52.

Bisgaard, Jorgen Peter Christian Vilhelm, to North American Philips Company, Inc. Circuit arrangement for stabilizing against variations in temperature and supply voltage. 3,629,717, Cl. 330-23.

Bishop, Irving N.; and Repko, Louis L., to Ford Motor Company. Fluid flow control valve assembly. 3,628,564, Cl. 137-516.29

Bishop, Nigel Douglas: *See—*
Ghosh, Ranajit; and Bishop, Nigel Douglas,3,629,474.

Bjorn, James M.; and Marx, Frederick, Jr. Electric swivel connection. 3,629,784, Cl. 339-8.

Blackburn, Marvin J.; and Corwin, Harry L., to Vernon Tool Co., Ltd. Method of expanding tubes. 3,628,227, Cl. 29-157.4

Blair, Gordon Purves; and Johnston, Mervyn Bradshaw, to Birmingham Small Arms Company Limited, The. Internal combustion engines. 3,628,518, Cl. 123-190.

Blatt, Leland F.: *See—*
Blatt, Leland F.; and Schreiber, William R., 3,628,783.

Blatt, Leland F. Swivel type hoist ring. 3,628,820, Cl. 294-82.

Blatt, Leland F.; and Schreiber, William R., to Blatt, Leland F. Clamps. 3,628,783, Cl. 269-91.

Blatter, Herbert Morton: *See—*
Rosen, Melvin Harris; and Blatter, Herbert Morton,3,629,437.

Blattner, Dietmar: *See—*
Ettischer, Helmut; and Blattner, Dietmar,3,629,793.

Blatz, Robert A. Package for storing and individually dispensing thin sheet-like articles, especially probe covers. 3,628,692, Cl. 221-70.

Blaupunkt-Werke GmbH: *See—*
Klein, Eberhard; and Zabel, Hans-J., 3,629,718.

Bleacher Sales Co.: *See—*
Gilbreath, William E.; and Gilbreath, Edward C., 3,628,628.

Blecherman, Sol S.; and Ulion, Nicholas E., to United Aircraft Corporation. Method of coating a plurality of substrates by vapor deposition. 3,628,994, Cl. 117-107.1

Blomgren, Oscar C., Jr., to Inter-Probe, Inc. Method and apparatus for the nondestructive testing of materials. 3,629,584, Cl. 250-83.3

Bloom, Earl M., Jr., to International Business Machines Corporation. Error detecting system for data processing circuitry. 3,629,825, Cl. 340-146.1

Blower, Charles A.: *See—*
Petersen, Kenneth C.; and Blower, Charles A.,3,629,199.

Blum, Josef, to Ivan Sorvall, Inc. Micrometer stage advance device for scientific instruments or the like. 3,628,386, Cl. 74-89.15

Blum, Samuel E.; and Chicotka, Richard J., to International Business Machines Corporation. Method for growth of mixed crystal with controlled composition. 3,628,998, Cl. 117-201.

Boase, Elmer E.: *See—*
Di Francesco, Alphonse B.; and Boase, Elmer E.,3,628,746.

Boehme, Klaus: *See—*
Neuhaus, Clemens; Boehme, Klaus; and Gutermuth, Hermann,3,628,503.

Boehringer Ingelheim G.m.b.H.: *See—*
Eberlein, Wolfgang; Heider, Joachim; Machleidt, Hans; and Engelhardt, Gunther, 3,629,234.

Boehringer-Mannheim GmbH: *See—*
Schaumann, Wolfgang; Dietmann, Karl; and Hardebeck, Klaus, 3,629,420.

Boelter, Donald A., to General Aviation Electronics, Inc. Inverter with zener regulated output frequency and voltage. 3,629,682, Cl. 321-2.

Boer, Jort, to Stork Amsterdam N.V. Apparatus for treating articles. 3,628,448, Cl. 99-362.

Boeve, Gerard J. C., to International Standard Electric Corporation. Stacking device. 3,628,787, Cl. 271-68.

Bogen, Wolfgang. Stable magnetic heads with housing formed from pressure cast dish-shaped parts. 3,629,516, Cl. 179-100.2

Bohannon, Philip. Convertible wig case. 3,628,655, Cl. 206-8.

Book Covers, Inc.: *See—*
Carter, Leewood C.; and Mullen, Edward K., 3,629,033.

Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Selector mechanism for coin controlled article dispensers. 3,628,643, Cl. 194-10.

Boon, Joseph L.: *See—*
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.

Borg-Warner Corporation: *See—*
Wiese, Winfred J., 3,628,799.

Borrmann, Dieter: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth,3,629,275.

Borst, Gaylord M.: *See—*
Quiram, Ronald G.; and Borst, Gaylord M.,3,628,196.

Borwnscombe, Eugene R.; Campbell, William M.; and Riggs, Emmet D., to Atlantic Richfield Company. Seismic holography. 3,629,796, Cl. 340-15.5

Bosch, Robert, G.m.b.H.: *See—*
Eheim, Franz, 3,628,892.
Knapp, Heinrich; and Eckert, Konrad, 3,628,515.

Bossen, Douglas C., to International Business Machines Corporation. Apparatus for multiple error correcting codes. 3,629,824, Cl. 340-146.1

Bossinger, Charles D.; and Enkoji, Takashi, to Armour Pharmaceutical Company. Pharmaceutical preparations containing a 2,4- diamino-6-substituted-S-triazine and methods of using same. 3,629,467, Cl. 424-249.

Bostock, James H., to Otis Engineering Corporation. Well tools. 3,628,822, Cl. 294-86.18

Bostwick, David Ira, to RCA Corporation. Hologram memory. 3,628,847, Cl. 350-3.5

Botta, Jose A., Jr.: *See—*
Easton, Rufus; and Botta, Jose A., Jr.,3,628,596.

Botts, Marion F.: *See—*
Regel, Erik K.; and Botts, Marion F.,3,629,376.

Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude, to Agencie Nationale de Valorisation de la Recherche, A.N.V.A.R. Paramagnetic resonance and optical pumping magnetometer in the near zero magnetic field-range. 3,629,697, Cl. 324-0.5

Boueil, Raymond; and Rolland, Marcel, to Regie Nationale des Usines Renault. Tractive stress detector for tractors. 3,628,420, Cl. 91-367.

Boughton, Donald Clarke; and Meier, Walter E., to Du Pont de Nemours, E. I., and Company. Polymethylenebis adamantane amines. 3,629,333, Cl. 260-563.

Bouthors, Pierre; and Archaux, Francois, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Automatic corrector for automotive headlamp beam orientation. 3,629,570, Cl. 240-7.1

Bouthors, Pierre; and Quemerais, Philippe, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Friction-type variable-speed transmissions. 3,628,388, Cl. 74-199.

Bowles-Benford: *See—*
Benford, Konrad H., 3,628,499.

Bowyer, Kern M., to Du Pont de Nemours, E. I., and Company. Underwater pressure pulse detector. 3,629,795, Cl. 340-5.

Boyce, Kenneth E.: *See—*
Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad D.,3,628,465.

Boyer, James Thomas, to Burroughs Corporation. Indicator tube with leads extending through mesa to support cathodes. 3,629,637, Cl. 313-109.5

Boyles, Richard Q., Jr. Vehicle traction increasing apparatus. 3,628,625, Cl. 180-115.

BP Chemicals (U.K.) Limited: *See—*
Addy, Leslie Ernest, 3,629,150.

Bracker AG: *See—*
Ramseier, Paul, 3,628,574.

Bradbury, Harold M.; Loeffler, Robert I.; Lott, Jerry L.; and Thomas, Billy L. Method for rotational energy exchange crystallization and material separation. 3,628,343, Cl. 62-58.

Bradbury, Wilburn F., to SCM Corporation. Printing system using a continuously moving platen. 3,629,502, Cl. 780-25.

Bradbury, Wilburn F.; and Misthos, George E., to SCM Corporation. Printing system. 3,629,504, Cl. 178-25.

Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R., to Bell & Howell Company. Film cartridge. 3,628,753, Cl. 242-197.

Brady, Tyson H., to Anacon, Inc. Refractometer. 3,628,867, Cl. 356-136.

Braeuer, Hans; and Brinkhoff, Hans, to Spezialchemie Gesellschaft mit beschrankter Haftung und Co., Arzneimittelfabrik. Compositions containing physiologically active kawa compounds, process of making same, and method of using same in therapy. 3,629,441, Cl. 424-279.

Bragdon, Edwin C. Twin ellipse pump. 3,628,898, Cl. 418-45.

Brauning, Gerhard; and Ort, Wolfgang, to Eastman Kodak Company. Automatic film threading device. 3,628,751, Cl. 242-187.

Brauning, Gerhard: *See—*
Ort, Wolfgang; and Brauning, Gerhard,3,628,749.

Braunschweigische Maschinenbauanstalt: *See—*
Kaether, Willy; Dietzel, Walter; and Backofen, Hans-Dieter, 3,629,001.
Kaether, Willy; and Backofen, Hans-Dieter, 3,629,002.

Braus, Harry: *See—*
Lecher, Hans Z.; Braus, Harry; and Woltermann, Jay R.,3,629,141.

Breda, Ernest John, to Du Pont de Nemours, E. I., and Company. Stabilized chlorosulfonated polyethylene. 3,629,363, Cl. 260-837.

Brede, Erwin C., to Texas Instruments, Incorporated. Seismic exploration in the vicinity of a shore area. 3,629,801, Cl. 340-15.5

Bremshey Aktiengesellschaft: *See—*
Auer, Adolf, 3,628,763.

Brendle, Marcel, to Centre National de la Recherche Scientifique. Process of polymerisation in an electric field and new products obtained thereby. 3,629,083, Cl. 204-165.

Brennan, Francis J. Drill supporting apparatus. 3,628,614, Cl. 173-29.

Brett, Thomas J., Jr.: *See—*
Courduvelis, Constantine I.; and Brett, Thomas J., Jr.,3,629,348.

Brewer, George E. F.; and Swider, Robert A., to Ford Motor Company. Anodic deposition of ceramic frit with cationic envelope. 3,629,086, Cl. 204-181.

Brewer, Lloyd E. Wall panel layout method. 3,628,232, Cl. 29-407.

Brickner, David R., to Sperry Rand Corporation. Electronic multipoint compensator. 3,629,566, Cl. 235-183.

Bridgestone Tire Company Limited: *See—*
Onishi, Akira; Fujio, Ryota; Kojima, Minoru; and Kawamoto, Hiroshi, 3,629,213.

Briggs, Peleg B., Jr.: *See—*
Maynard, George A.; and Briggs, Peleg B., Jr.,3,628,715.

Brinckman, Eric Maria, to Gevaert-Agfa N.V. Thermo-recording. 3,628,953, Cl. 96-36.3

Brinkhoff, Hans: *See—*
Braeuer, Hans; and Brinkhoff, Hans,3,629,441.

Brinkmann, Ludwig, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Shaped article from a mixture of polyethylene terephthalates of different reduced viscosities. 3,629,366, Cl. 260-860.

Bristol, Donald R., to Kaiser Aluminum & Chemical Corporation. Alumina feed control. 3,629,079, Cl. 204-67.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Vinyl ester polymer emulsions free of carboxyl groups stabilized with a zinc compound. 3,629,179, Cl. 260-29.6

Bristol-Myers Company: *See—*
Schmitz, Henry; and DeVault, Robert L., 3,629,407.

British Insulated Callander's Cables Limited:*See—*
Swampillai, Christy Edward Selvanayagam; and Edwards, Derek Reginald, 3,629,486.

British Petroleum Company Limited, The: *See—*
Groszek, Aleksander Jerzy; Witheridge, Rodney Ernest; and Geach, Charles John, 3,629,107.
Olive, Martin Frederick; and Dovey, Geoffrey, 3,629,351.

British Petroleum Company, The: *See—*
Desty, Denis H.; and Whitehead, David M., 3,628,735.

Brittain, Derek John: *See—*
Patrick, Michael Alfred; and Brittain, Derek John,3,629,650.

Broadbent, Arnold, to Parks-Cramer (Great Britain) Limited. Apparatus for separating textile fibers from conveying air. 3,628,313, Cl. 55-283.

Broddner, Sven Malte: *See—*
Magnusson, Ingemar Arnold; Marklund, Per Tage; Broddner, Sven Malte; Ax, Lars; and Andersson, Robert Bert,3,628,457.

Brody, Frederick; Halasz, Alexander; and Bil, Milos S., to Clairol Incorporated. Compounds for hair dycing compositions. 3,629,330, Cl. 260-553.

Broggi, Armando: *See—*
Agazzi, Alberto; Broggi, Armando; Galli de Paratesi, Sergio; and Ghiurghi, Luciano,3,629,059.

Bronne, William B.; and Lintchicum, Harley E., to Carrier Corporation. Apparatus for tube removal. 3,628,246, Cl. 30-92.5

Brooks, Douglass E.: *See—*
Miller, Albert R.; and Brooks, Douglass E.,3,629,173.

Brookside Corporation: *See—*
Wooden, John A., 3,628,888.

Brossel, Jean: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude,3,629,697.

Brotherton, Thomas K.; and Lynn, John W., to Union Carbide Corporation. Reaction products of olefinically unsaturated diisocyanates (II). 3,629,200, Cl. 260-75.

Brown, Benjamin W.; and Valentino, James A., to Sanders Associates, Inc. Digital phase synthesizer. 3,629,715, Cl. 328-155.

Brown Boveri & Cie Aktiengesellschaft: *See—*
Stehle, Max; and Kirchner, Egon, 3,628,710.

Brown, Brent W.; and Rich, Edward B. Transistorized fluorescent tube operating circuit. 3,629,648, Cl. 315-98.

Brown, Christopher Kingsley; and Over, William Roderick, to AMP Incorporated. Tool for forming electrical connections. 3,628,202, Cl. 7-14.1

Brown, Ralph V., to Bendix Corporation, The. Transient resistant transistorized blocking oscillator for switching inductive loads. 3,629,674, Cl. 318-128.

Brown, Richard W.: *See—*
Sidenstick, James E.; Brown, Richard W.; Nichols, Herbert E.; and Burggraf, Frederick,3,628,885.

Brown Shoe Company, Inc.: *See—*
Matlock, Gordon E., 3,628,500.

Brown, William F.; Goetchius, Ronald J.; Furman, George R.; and Rouse, Alan D., to Texaco Inc. Credit card validation system using an optical reader employing reflected light. 3,629,835, Cl. 340-149.

Broyles, Ben L., to Du Pont de Nemours, E. I., and Company. Storage container. 3,628,718, Cl. 229-15.

Bruce, George H.: *See—*
Childers, Mark A.; and Bruce, George H.,3,628,604.

Bruggemann, Harro, to Commonwealth of Australia, The. Analogue multiplier. 3,629,567, Cl. 235-194.

Bruins, Johannis, to De Rotterdamsche Droogdok Maatschappij N.V. Closing device with a stop valve which is situated outside the valve housing. 3,628,562, Cl. 137-459.

Brun, Roger, to U.S. Philips Corporation. Control device particularly suitable for synchronization signal generators for television. 3,629,506, Cl. 178-69.5

Brune, William L., to Bell Telephone Laboratories, Incorporated. Transformer with controlled low coupling. 3,629,741, Cl. 333-78.

Bruning, Armin M., to Westinghouse Electric Corporation. Electric arc vacuum melting processes. 3,628,948, Cl. 75-10.

Brunner, Fred William, to Manning's Inc. Processing apparatus. 3,628,602, Cl. 165-61.

Bryant, Clifford F., 50% to Harris, Josephine. Beverage container drinking spout. 3,628,695, Cl. 222-89.

Buchel, Karlheinz: *See—*
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred,3,629,273.

Buchmann, Paul; Egri, Laszlo; and Beringer, Monique, to Tamag Basel AG. Method of producing shaped tobacco products and shaped products produced thereby. 3,628,541, Cl. 131-140.

Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A., 3,629,322.

Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A., to Buckman Laboratories, Inc. Organic esters and their use as ultraviolet light absorbers and as heat stabilizers. 3,629,322, Cl. 260-476.

Budrose, Charles R., to Bio-Dynamics, Inc. Braille dictionary. 3,628,257, Cl. 35-35.

Buffington, Herman L.; and Stribling, Robert M., to Beverage Air Company. Sliding door construction. 3,628,289, Cl. 49-409.

Buhl, Erwin: *See—*
Halder, Anton; and Buhl, Erwin,3,629,604.

Bullock, Charles F.: *See—*
Barr, Fred S.; Bullock, Charles F.; and Collins, Galen F.,3,629,454.

Bulova Watch Company, Inc.: *See—*
Aronow, Martin L.; and Rehse, Denis, 3,628,381.
Baumgartner, Werner R.; and Kaufmann, Hans P., 3,628,323.
Heller, Oscar; and Chmiel, John A., 3,629,719.

Bundschuh, John J.: *See—*
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.

Bunger, David A., to Baldwin, D. H., Company. Automatic chord and rhythm electronic organs. 3,629,481, Cl. 84-1.03

Buning, Robert; and Kotzsch, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Process for the copolymerization of vinyltrialkoxysilanes. 3,629,214, Cl. 260-85.5

Bunker-Ramo Corporation, The: *See—*
Cowmeadow, Richard R., 3,629,785.
Dorrell, Robert F., 3,629,792.

Burcham, Ronald E.; and Kelver, William L., Jr., to CTS Corporation. Variable resistance control and switch with common operating member. 3,629,780, Cl. 338-198.

Burgdorf, Jochen: *See—*
Beller, Hans Albert; and Burgdorf, Jochen,3,628,636.

Burggraf, Frederick: *See—*
Sidenstick, James E.; Brown, Richard W.; Nichols, Herbert E.; and Burggraf, Frederick,3,628,885.

Burkert, Herbert G.: *See—*
Mates, Constantine George; and Burkert, Herbert G.,3,628,245.

Burkhardt, Jurgen: *See—*
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich,3,629,359.

Burkhart, Dean C.; Conrad, Lee R.; and Stokes, John B., III, to Du Pont de Nemours, E. I., and Company. Copolyester/phenol-modified coumarone-indene blend compositions. 3,629,360, Cl. 260-829.

Burmeistew, William W., to Sperry Rand Corporation. Non-pendulous flux valve compass system. 3,628,254, Cl. 33-225.

Burndy Corporation: *See—*
Tilmann, Hans-Peter; and De Vuyst, Hugo Richard N., 3,629,809.

Buro Patent AG: *See—*
Wesener, Erich, 3,628,624.

Burr, Alan Carleton, to Howe Folding Furniture, Incorporated. Folding table with interlocking legs and apron or shield. 3,628,471, Cl. 108-132.

Burroughs Corporation: *See—*
Boyer, James Thomas, 3,629,637.
Faber, Ulbe, 3,629,857.
Hauck, Erwin A.; and Werner, John R., 3,629,854.
Simmons, William L., 3,628,788.

Burroughs, John L.: *See—*
Segura, Marnell A.; Savage, Henry R.; and Burroughs, John L.,3,628,986.

Burroughs Welcome & Co. (U.S.A.) Inc.: *See—*
Kanarek, Alexander David; and Tribe, George William, 3,629,470.

Burroughs Wellcome Co.: *See—*
Barrett, Paul Anthony, 3,629,416.

Burton, Duane C. Concrete form. 3,628,764, Cl. 249-9.

Burton, Harold William; and Reynolds, Harry Herbert, to Lucas, Joseph, (Industries) Limited. Means for supporting a member in a bore. 3,628,686, Cl. 220-42.

Butkus, Gediminas J., to M-E-M Controls, Inc. Magnet controller. 3,629,663, Cl. 317-123.

Butler Manufacturing Company: *See—*
Williamson, Dan G., 3,628,369.

Byberg, Bjarne I.: *See—*
Lattin, Leroy E.; and Byberg, Bjarne I.,3,628,247.

Byers, Robert H. Stroller mover. 3,628,620, Cl. 180-1.

Cadorette, Raymond: *See—*
Eckert, George W.; and Cadorette, Raymond,3,628,926.

Cahill, Lysle D., to Mead Corporation, The. Scanner with analog to digital signal conversion. 3,629,495, Cl. 178-6.6

Cairns, Hugh; Hazard, Richard; and King, John, to Fisons Pharmaceuticals Limited. Derivative of chromone-2-carboxylic acid. 3,629,290, Cl. 260-345.2

Caldwell, William W.: *See—*
Orzechowski, Walter J.; Pace, Herbert D.; Osterberg, Bruce H.; Caldwell, William W.; and Murphy, Arthur J.,3,629,556.

Cam-Stat Incorporated: *See—*
Maddox, Gregory A., 3,629,607.

Camosso, Domenico; and Lescio, Benito, to RIV-SKF Officine di Villar Perosa S.p.A. Rolling bearing. 3,628,838, Cl. 308-188.

Campbell, William M.: *See—*
Borwnscombe, Eugene R.; Campbell, William M.; and Riggs, Emmet D.,3,629,796.

Canadian Patents and Development Limited: *See—*
Pulfer, James K.; and Shepertycki, Theodore H., 3,629,482.
Sedra, Adel S.; and Smith, Kenneth C., 3,629,720.

Canguilhem, Jean Francois. Computer programming. 3,628,904, Cl. 444-1.

Capozzi, Anthony J., to International Business Machines Corporation. Record locate apparatus for variable length records on magnetic disk units. 3,629,860, Cl. 340-172.5

Carborundum Company, The: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., 3,628,995.

Carey, Richard Allan, Sr.: *See—*
Veron, Harry; and Carey, Richard Allan, Sr.,3,629,638.

Carlson, Allan Ivan, to U.S. Philips Corporation. Pattern noise reduction system. 3,629,499, Cl. 178-7.2

Carlson, Gaynor. Trash clearing apparatus. 3,628,611, Cl. 172-39.

Carlsson, Bengt Henry, to Kristofer Joakim Lehmkuhl. Apparatus for the production of steam for humidifying air. 3,629,550, Cl. 219-285.

Carlsson, Sixgen E. Device for the arresting of aircraft by either a net or a cable. 3,628,757, Cl. 244-110.

Carlston, Earl F., to Chevron Research Company. Thermoset polyester resins. 3,629,362, Cl. 260-835.

Carmet Company: *See—*
Phillips, William H., Jr., 3,628,370.
Phillips, William H., Jr., 3,628,449.
Sowko, John J., Sr., 3,628,233.

Carpenter, Ray W., to General Tire & Rubber Company. Method of producing metastable gaseous chlorine oxygen compounds with nuclear fission fragments. 3,629,081, Cl. 204-157.1

Carpigiani, Poerio. Liquid-and-air mixing gear pump. 3,628,893, Cl. 417-310.

Carreiro, Ronald. Snow surfboard. 3,628,804, Cl. 280-18.

Carrell, Lelah A.; and Morris, Richard W., to H-C Industries, Inc. Fluorescent marking. 3,628,271, Cl. 40-311.

Carrico, John P.; and McGinnis, Patrick F., to Bendix Corporation, The. Monopole/quadrupole mass spectrometer. 3,629,573, Cl. 250-41.9

Carrier Corporation: *See—*
Bronne, William B.; and Lintchicum, Harley E., 3,628,246.

Carroll, David I., to Franklin Gno Corporation. Apparatus and methods for separating electrons from ions. 3,629,574, Cl. 250-41.9

Carse, Clifford C. Multiple fluid control device. 3,628,566, Cl. 137-594.

Carter, John L.; and McGowan, Joseph W., to United States of America, Army. Waveguide power limiter comprising a longitutinal arrangement of alternate ferrite rods and dielectric spacers. 3,629,735, Cl. 333-17.

Carter, Leewood C.; and Mullen, Edward K., to Book Covers, Inc. Method of making padded cover board structure. 3,629,033, Cl. 156-204.

Caruso, Gerard P., to Shell Oil Company. Lubricant inhibitor. 3,629,108, Cl. 252-28.

Case, Alfred L., to Versitron, Inc. Relay photoelectric using optical couples. 3,629,590, Cl. 250-208.

Case, J. I., Company: *See—*
Maurer, Herman J., 3,628,395.

Casey, Robert S.; and Martin, Lynn P., to Textron, Inc., mesne. Writing implement. 3,628,876, Cl. 401-198.

Cash, Thomas P. Flap wheel. 3,628,618, Cl. 180-7.

Casida, Lester E., Jr.; and Abbott, Bernard J., to Texaco Inc. Microbiological process for preparation of internal mono-alkenes. 3,629,072, Cl. 195-28.

Cassaday, Lewis E., to Greenwood Mills. Analogue to digital converters. 3,629,559, Cl. 235-92.

Catania, Salvatore J.Beauticians' hand tool. 3,628,547, Cl. 132-148.

Caterpillar Tractor Company: *See—*
Bailey, John M., 3,628,427.
Codo, Edward A., 3,628,661.
Liess, Richard K.; Ribbing, Donald E.; Stepe, Visvaldis A.; and Wilson, Eugene M., 3,628,612.
Miller, Robert G., 3,628,330.

Cattey, Edward P.; Poturnicki, Raymond H.; Johnston, James J.; and Bedard, Walter J., to Automatic Equipment Development Corporation. Electronic component with lead reversely bent for plural terminal connections. 3,629,662, Cl. 317-118.

C.A.V. Limited: *See—*
Mowbray, Dorian Farrar, 3,628,736.

Cayle, Theodore, to Baxter Laboratories, Inc. Acid-active lactose. 3,629,073, Cl. 195-62.

Celanese Corporation: *See—*
Stackman, Robert W.; and Conciatori, Anthony B., 3,629,295.
Stautzenberger, Adin L.; and MacLean, Alexander F., 3,629,328.
Stautzenberger, Adin L.; and Hobbs, Charles C., Jr., 3,629,341.
Steinmann, Henry W., 3,629,198.

Cense, Adriaan, to U.S. Philips Corporation. Synchronizing separator for separating synchronizing pulses from a composite video signal. 3,629,501, Cl. 178-7.3

Centre National de la Recherche Scientifique: *See—*
Brendle, Marcel, 3,629,083.

Cernia, Enrico; Rio, Arturo; Malacari, Natale Ercoli; and Mancini, Corrado, to Societa Asfalti Bitumi Cementi e Derwati, S.p.A. Aqueous phase polymerization of ethylene. 3,629,224, Cl. 260-94.9

Ceskoslovenska akademie ved: *See—*
Stol, Miroslav; Stoy, Vladimir; Kliment, Karel; Prokes, Milan; and Mares, Jaromir, 3,628,988.

Cessna Aircraft Company, The: *See—*
Newborough, Harry, 3,628,557.

Chafer, Henry James: *See—*
Maycock, William Henry; and Chafer, Henry James,3,629,652.

Chalhoub, Christian. Repeater for a transmission line and a method of monitoring the repeater in the line. 3,629,523, Cl. 179-175.31

Charles Supper Co., Inc.: *See—*
Thomas, Roy L., Jr., 3,628,761.

Chasek, Norman E., to International Microwave Corporation. Straight-through R.F. microwave communications repeater system using tunnel diode amplifier for constant power output level. 3,629,706, Cl. 325-9.

Chattem Chemicals: *See—*
Schmank, Horst W., 3,629,229.

Chattem Drug & Chemical Company: *See—*
Schmank, Horst W., 3,629,229.

Cheale, Leonard Frederick: *See—*
Mayhew, Antony James; and Cheale, Leonard Frederick,3,629,543.

Chemagro Corporation: *See—*
Aichenegg, Paul C.; and Thornhill, Richard A., 3,629,375.
Emerson, Carl D.; and Aichenegg, Paul C., 3,629,312.
Emerson, Carl D.; and Aichenegg, Paul C., 3,629,313.
Regel, Erik K.; and Botts, Marion F., 3,629,376.

Chemische Werke Huls A.G.: *See—*
Benedikter, Kurt; Hagel, Karl Otto; and Kiepert, Klaus, 3,629,212.

Chen, Peter P. D.: *See—*
Walters, William J.; Rusnack, John G.; and Chen, Peter P. D.,3,629,535.

Chenevert, Martin E., to Esso Production Research Company. Water-base well fluids for shale stability and use thereof. 3,628,615, Cl. 175-65.

Cheng, Ming T.: *See—*
Baldwin, Roger A.; and Cheng, Ming T.,3,629,296.

Cherneva, Elena Pavlovna: *See—*
Kargin, Valentin Alexeevich; Cherneva, Elena Pavlovna; Ignatovich, Tatyana Danilovna; Tunitsky, Nikolai Nikolaevich; and Toroptseva, Tatyana Nikolaevna,3,629,082.

Chernow, Michael, to Monocraft, Inc. Ring manually adjustable to a plurality of constant sizes. 3,628,351, Cl. 63-15.5

Chery, Walter V. Power transmission. 3,628,398, Cl. 74-688.

Chevron Research Company: *See—*
Allphin, Nylen L., Jr., 3,629,225.
Carlston, Earl F., 3,629,362.
Haunschild, Willard M., 3,629,478.
Mulaskey, Bernard F., 3,629,149.

Chicotka, Richard J.: *See—*
Blum, Samuel E.; and Chicotka, Richard J.,3,628,998.

Chikazawa, Masafumi: *See—*
Arakawa, Morimasa; Katanosaka, Akisato; and Chikazawa, Masafumi,3,629,221.

Childers, Mark A.; and Bruce, George H., to Esso Production Research Company. Method and apparatus for cementing offshore wells. 3,628,604, Cl. 166-0.5

Childers, Thomas W.: *See—*
Larralde, Edward; Weber, Ronald A.; Hanes, James W. E.; and Childers, Thomas W.,3,628,812.

Chisholm, Hamilton C.; and Shannon, Raymond M., to Hewlett-Packard Company. Digital adjustment apparatus for electronic instrumentation. 3,629,845, Cl. 340-172.5

Chisso Corporation: *See—*
Ando, Masao, 3,629,551.

Chmiel, John A.: *See—*
Heller, Oscar; and Chmiel, John A.,3,629,719.

Chopard, Remy; and Besson, Rene, to Ebauches S.A. Electric timepiece. 3,628,324, Cl. 58-23.

Chope, Ronald D.; and Hevonkoski, Frank A., to Snyder Corporation. Indexing turret. 3,628,400, Cl. 74-826.

Chore-Time Equipment, Inc.: *See—*
Myers, Lawrence A., 3,628,505.

Chow, Woo F., to Bell Telephone Laboratories, Incorporated. Store with access rate determined by execution time for stored words. 3,629,862, Cl. 340-172.5

Christen, Roland W.; Guyeska, John C.; and Horstman, Gerald H., to Lear Siegler, Inc. Power supply wherein star-connected windings are arranged to produce fields mechanically coincident and electrically out of phase. 3,629,684, Cl. 321-7.

Chubb & Son's Lock and Safe Company Limited,:*See—*
Randall, William E.; and Constable, Geoffrey Ernest Patrick, 3,629,834.

Chumaevskaya, Alla Nikolaevna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.

Chun, Ping Sun, to Bell Telephone Laboratories, Incorporated. Driven inverter with low impedance path to drain stored charge from switching transistors during the application of reverse bias. 3,629,725, Cl. 331-113.

Chuwa Woo Industry Co., d: *See—*
Schaber, Christian; and Schmid, Gunter, 3,628,217.

Chuwa Wool Industry Co., Ltd.: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo, 3,628,219.

Ciba Corporation: *See—*
Gschwend, Heinz Werner; and Finch, Neville, 3,629,433.
Rosen, Melvin Harris; and Blatter, Herbert Morton, 3,629,437.

Ciba Limited: *See—*
Batzer, Hans; Habermeir, Juergen; and Porret, Daniel, 3,629,263.
Dittrich, Volker, 3,629,460.
Heer, Alfred; Schneider, Wolfgang; and Dreher, Bernd, 3,629,181.
Lohse, Friedrich; Schmid, Rolf; and Batzer, Hans, 3,629,226.

Ciba-Geigy AG: *See—*
Ehrat, Kurt, 3,628,723.
Stocker, Emil, 3,628,976.

Ciba-Geigy Corporation: *See—*
Bader, Jorg; and Gatzi, Karl, 3,629,252.
Doebel, Karl J.; and Gagneux, Andre R., 3,629,473.
Gruenfeld, Norbert; and Wasley, Jan W. F., 3,629,450.
Hausermann, Heinrich; and Troxler, Eduard, 3,629,417.
Kuhnis, Hans Herbert; and Denss, Rolf, 3,629,426.
Payot, Pierre H., 3,629,461.

CIREB S.A.: *See—*
Parent, Leon G., 3,628,209.

Cirillo, John, to Kidde, Walter, & Company, Inc. Bi-directional inertia responsive gas dispensing apparatus. 3,628,550, Cl. 137-38.

Cirillo, John, to Kidde, Walter, & Company, Inc. Passenger safety apparatus for vehicles. 3,628,809, Cl. 280-150.

Cislaw, Frank M. Car top carrier. 3,628,677, Cl.

Cities Service Company: *See—*
Barker, James E., 3,628,920.
Miller, Clarence O.; and McAlister, Charles G., 3,629,151.

Cities Service Oil Company: *See—*
Glass, Eugene D.; and Rhoades, Vaughan W., 3,628,929.

Clad, Werner Helmut: *See—*
Sander, Bruno; Pommer, Ernst-Heinrich; Clad, Werner Helmut; and Wittmann, Otto,3,629,466.

Clairol Incorporated: *See—*
Brody, Frederick; Halasz, Alexander; and Bil, Milos S., 3,629,330.

Clampitt, Bert H.: *See—*
Gilbert, Ronald E.; and Clampitt, Bert H.,3,628,993.

Clapson, William J.: *See—*
Stephenson, Harry B.; Clapson, William J.; and Wolkar, Edwin L.,3,629,206.

Clare, C. P., & Company: *See—*
Deutsch, Norman, 3,629,811.

Clark, Charles T.: *See—*
Gartner, William J.; and Clark, Charles T.,3,629,116.

Clark Equipment Company: *See—*
Palen, Richard L., 3,628,222.

Clark, Fred E., to Akron Standard, division of Eagle-Picher Industries, Inc. Mill stock festooning conveyor. 3,628,712, Cl. 226-104.

Clark, James M., to International Telephone and Telegraph Corporation. Phase comparator. 3,629,712, Cl. 328-109.

Clark, Larry K.; Bartlett, Peter G.; and Hill, Frank W., to Gulf & Western Industries, mesne. Conflicting phase error detector. 3,629,802, Cl. 340-46.

Clark, William R.; Hare, George H.; and Osborn, Peter E., to Singer Company, The. Flexible programming apparatus for electronic computers. 3,629,850, Cl. 340-172.5

Clarkson Industries, Inc.: *See—*
Lee, Wilfred J., 3,628,769.

Clay, Burton R.; and Strickland, Wilfred A. Autocollimator including a retroflector element. 3,628,869, Cl. 356-153.

Cliche, Carl E.: *See—*
Grubb, Willard T.; and Cliche, Carl E.,3,629,008.

Clifton, George K. Can or bottle carriers. 3,628,709, Cl. 224-45.

Close, Albert R., to Ford Motor Company. Seat back position control mechanism. 3,628,831, Cl. 297-379.

Clutsom-Penn International Limited: *See—*
Farwell, Roy, 3,628,354.

Coalson, Thomas E. Two piece fishing lure. 3,628,276, Cl. 43-42.09

Coaxial Scientific Corporation: *See—*
McVoy, David S., 3,629,492.

Codo, Edward A., to Caterpillar Tractor Company. Filter assembly with improved bypass valve regulating means. 3,628,661, Cl. 210-130.

Cogar Corporation: *See—*
Sahni, Ravinder J., 3,629,782.

Coggin, James R., to Bendix Corporation, The. Method for preparing control tapes. 3,629,558, Cl. 235-151.1

Cohen, Charles I.: *See—*
Mc Kinnis, Charles L.; and Cohen, Charles I.,3,628,669.

Cohen-Tannoudji, Claude N.: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude,3,629,697.

Coleman, Arthur J. Floating breakwater. 3,628,334, Cl. 61-5.

Coleman, Denis, to American Cyanamid Company. Phosphorus-containing polymers. 3,629,207, Cl. 260-79.3

Colgate-Palmolive Company: *See—*
Elkind, Vincent Theodore; and Hunter, Robert Tweedy, 3,628,997.

Collier, John Covell; and Rickards, David William, to AMP Incorporated, mesne. Electrical switch. 3,629,748, Cl. 335-196.

Collins, Carter C., to Institute of Medical Sciences, The. Tactile image projection system. 3,628,193, Cl. 3-1.

Collins, Galen F.: *See—*
Barr, Fred S.; Bullock, Charles F.; and Collins, Galen F.,3,629,454.

Collins Radio Company: *See—*
Hartley, Jack B., 3,629,788.

Columbia Ribbon and Carbon Manufacturing Co., Inc.: *See—*
Newman, Douglas A.; and Schlotzhauer, Allan T., 3,628,979.

Comel International Corporation: *See—*
Frey, Cleon F.; and Melvin, Myron F., 3,629,764.

Commissariat a l'Energie Atomique:*See—*
Roche, Michel, 3,629,643.

Commonwealth of Australia, The: *See—*
Bruggemann, Harro, 3,629,567.

Compagnie des Montres Logines Fracillon S.A.: *See—*
Berney, Jean-Claude, 3,629,743.

Compagnie des Montres Longines, Francillion S.A.: *See—*
Berney, Jean Claude, 3,629,727.

Compagnie Generale d'Electricite:*See—*
Courrier, Gilbert, 3,629,592.

Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See—*
Fahlenberg, Paul, 3,628,437.

Conciatori, Anthony B.: *See—*
Stackman, Robert W.; and Conciatori, Anthony B.,3,629,295.

Coninental Oil Company: *See—*
Smith, John H., 3,629,097.

Conley, James W., to General Electric Company. Data acquisition and identification system. 3,629,855, Cl. 340-172.5

Connrex Corporation, The: *See—*
Hahn, Laurence W., 3,629,010.

Conrad, Lee R.: *See—*
Burkhart, Dean C.; Conrad, Lee R.; and Stokes, John B., III,3,629,360.

Conrad, William R. Water walking device. 3,628,491, Cl. 115-2.

Consolidation Coal Company: *See—*
Gorin, Everett; Struck, Robert T.; and Kulik, Metro D., 3,629,159.

Constable, Geoffrey Ernest Patrick: *See—*
Randall, William E.; and Constable, Geoffrey Ernest Patrick,3,629,834.

Container Corporation of America: *See—*
Rogers, Roy E., 3,628,689.

Continental Oil Company: *See—*
Oertle, Donald H.; and Radd, Frederick J., 3,628,912.

Controls Company of America: *See—*
Kothe, Erich, 3,628,782.

Cook, Elton S.; and Tanaka, Kinji, to Stanley Drug Products, Inc. Method of treating bacterial infections. 3,629,451, Cl. 424-319.

Cookson, Robert Wilbur: *See—*
Audesse, Emery; and Cookson, Robert Wilbur,3,629,640.

Cooper, Joseph; and Corbett, William James, to Grace, W. R., & Co. Paint removing method. 3,629,004, Cl. 134-31.

Coover, Harry W., Jr.; and Joyner, Frederick B., to Eastman Kodak Company. Olefin polymerization catalysts. 3,629,222, Cl. 260-93.7

Copeland, Llewellyn E.: *See—*
Greening, Nathan R.; Copeland, Llewellyn E.; and Verbeck, George J.,3,628,973.

Copland, George V.; and Gass, Edward W., to Halliburton Company. Oil field production automation and apparatus. 3,629,859, Cl. 340-172.5

Copolymer Rubber & Chemical Corporation: *See—*
Gerlicher, Robert A., 3,629,113.

Coppens, Guillaume, to Solvay & Cie. Photochemical purification of 1,2-dichlorethane. 3,629,085, Cl. 204-163.

Corbett, Herbert O., to National Distillers and Chemical Corporation. Valve structure for extruders. 3,628,561, Cl. 137-331.

Corbett, William James: *See—*
Cooper, Joseph; and Corbett, William James,3,629,004.

Corluy, Hans Josephus: *See—*
Philippaerts, Herman Adelbert; Corluy, Hans Josephus; Gernert, Herbert; and Schulz, Guenther E. W.,3,628,960.

Cornish, Robert Franklin; and Leibensperger, Robert Lee. High speed tapered roller bearing. 3,628,835, Cl. 308-187.

Corsette, Douglas F., to Diamond International Corporation. Container with venting gasket. 3,628,704, Cl. 222-513.

Cortorillo, Salvatore, to Duro-Test Corporation. Method of making a vapor discharge lamp. 3,628,846, Cl. 316-19.

Corwin, Harry L.: *See—*
Blackburn, Marvin J.; and Corwin, Harry L.,3,628,227.

Costa, Michael J. Rotating field transformer and tape recording system using same. 3,629,518, Cl. 179-100.2

Costarella, Nino F.; and Giuffre, Anthony A., to Nino's Inc. Air purification systems. 3,628,311, Cl. 55-223.

Costerousse, Germain; and Gasc, Jean-Claude, to Roussel-UCLAF. 17β-Ethers of Δ4,9,11-gonatrienes and compositions containing them. 3,629,244, Cl. 260-239.55

Cotter, James F., to Anchor Hooking Corporation. Assorting device. 3,628,658, Cl. 209-125.

Cotton, Herbert John Thomas; and Hemmings, Robert, to Lucas, Joseph, (Industries) Limited. Full wave rectifier assemblies. 3,629,630, Cl. 310-68.

Cotton, Herbert John Thomas; and Hemmings, Robert. Full wave rectifier assemblies. 3,629,631, Cl. 310-68.

Courduvelis, Constantine I.; and Brett, Thomas J., Jr., to Uniroyal, Inc. Process for producing 5-alkylidene-2-norbornenes. 3,629,348, Cl. 260-666.

Courrier, Gilbert, to Compagnie Generale d'Electricite. Optical means for space exploration. 3,629,592, Cl. 250-216.

Courtaulds North America Inc.: *See—*
Bakewell, David, 3,628,747.

Couture, Richard P. Sporting equipment for playing game called toe toss. 3,628,794, Cl. 273-100.

Cowmeadow, Richard R., to Bunker-Ramo Corporation, The. Dual Electrical connector having self leveling service mechanism. 3,629,785, Cl. 339-14.

Cox, Gerald H.: *See—*
Williams, Donald F.; and Cox, Gerald H.,3,628,762.

CPC International Inc.: *See—*
Marino, Morris Anthony; Birkhaug, Frederic John; and Sadek, George Edward, 3,629,307.

Cralle, Walter O., Jr.; Simpson, Henry W.; and Kockler, Barry C., to International Business Machines Corporation. Electrically driven type element. 3,628,644, Cl. 197-12.

Cramer, Henry R., to Olin Corporation. Hydraulic fluids containing novel inhibitor compositions. 3,629,111, Cl. 252-75.

Cranfill, John D., to Frank, W. R., Packaging Engineers, Inc. Method of embossing a three dimensional medallion into a thermoplastic resin substrate. 3,629,042, Cl. 156-303.1

Creslein, William E., III: *See—*
Mulready, Richard C.; and Creslein, William E., III,3,628,836.

Cricklewood Works: *See—*
Randall, William E.; and Constable, Geoffrey Ernest Patrick, 3,629,834.

Crispino, Daniel P. Ripping machine. 3,628,833, Cl. 299-36.

Crites, Nelson A., to Scientific Advances, Inc., mesne. Progressively collapsible variable resistance element. 3,629,774, Cl. 338-114.

Crown Zellerbach Corporation: *See—*
Back, Sangho E.; and Murdock, Gordon A., 3,629,000.

Cryer, Edward, to Lucas, Joseph, (Industries) Limited. Pivotal switch with rotor carrying two movable contacts, and having three stable and one unstable operating positions. 3,629,524, Cl. 200-6.

CTS Corporation: *See—*
Burcham, Ronald E.; and Kelver, William L., Jr., 3,629,780.

Cullen, Robert E., to Eastman Kodak Company. Apparatus for sensing and counting images disposed on information bearing media. 3,629,840, Cl. 340-172.5

Culp, Gordon W.: *See—*
Lee, Henry L., Jr.; and Culp, Gordon W.,3,628,813.

Curchack, Herbert D., to United States of America, Army. Hydraulic mitigator. 3,628,638, Cl. 188-312.

Curtis, Herbert F.: *See—*
Ardussi, Wallace F.; and Curtis, Herbert F.,3,628,441.

Curtiss, Philip F., to Paulsboro Chemical Industries, Inc. Manufacture of plastic articles having a mottled surface. 3,628,295, Cl. 51-319.

Curtiss, Walter W., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,628,586, Cl. 152-356.

Cutaia, Alfred; McCullough, John W.; and Piller, Don W., to International Business Machines Corporation. Sectioning apparatus and method for character- recognition systems. 3,629,826, Cl. 340-146.3

Cuthbert, Phillip W.; and Neail, William R., to Hexcel Corporation. Pressurized multistrand cable air bypass and testing device. 3,629,487, Cl. 174-22.

Cutter Laboratories, Inc.: *See—*
Hardie, Waldo R.; and Aaron, Joseph E., 3,629,287.

Cvacho, Daniel S.: *See—*
McClellan, Hearst; and Cvacho, Daniel S.,3,628,451.

Cvacho, Daniel S.; Duss, John J., Jr.; and Lee, Harvy W., Jr., to Reynolds Metals Company. Workpiece positioning apparatus and machine using same. 3,628,368, Cl. 72-361.

Cycles Peugeot: *See—*
Archer, Jean, 3,628,805.

Czarnikow, George K.; and Owen, William S., to Eastman Kodak Company. Apparatus for processing photographic material with radiation. 3,628,440, Cl. 95-89.

Czernikowski, Roy S., to General Dynamics Corporation. Information handing system having error correction capacities. 3,629,823, Cl. 340-146.1

Dafler, Gene L.; and Fannin, Wayne V., to General Motors Corporation. Cooling arrangement for a dynamoelectric machine. 3,629,627, Cl. 310-54.

Dafler, Gene L.; and Fannin, Wayne V., to General Motors Corporation. Conduit arrangement for a liquid cooled dynamo- electric machine. 3,629,634, Cl. 310-54.

Dafler, Gene L.: *See—*
Rank, William E.; and Dafler, Gene L.,3,629,628.

Dahl, Ernest A., Jr. Magnetic card index. 3,628,269, Cl. 40-68.6

Daley, Frank R. L., Jr., to General Motors Corporation. Disc brake caliper mounting means. 3,628,639, Cl. 188-73.3

D'Amico, John J., to Monsanto Company. S-(1H-1,2,4-triazol-5-yl) dithiocarbamates. 3,629,277, Cl. 260-308.

D'Amico, John Joseph; and Mullins, Darrell Dexter, to Monsanto Company. N-aminoalkyl thiazolesulfenamides as vulcanization accelerators. 3,629,208, Cl. 260-79.5

Dana Corporation: *See—*
De Rupa, James L., 3,628,361.

Dancis, Douglas E.; Dorfuss, Gerald E.; and Zitron, Benjamin C., to Allied Management & Systems Corporation. Multifunction routing network. 3,629,844, Cl. 340-172.5

Danfoss A/S: *See—*
Kristensen, Knud, 3,629,155.

Danhauser, Justus: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.

Dann, Bert H.; and Gardner, Floyd M., to Bell & Howell Company. Signal correcting apparatus. 3,629,491, Cl. 178-5.4

Dannewitz, Robert: *See—*
Isreeli, Jack; Kassel, Aaron; and Dannewitz, Robert,3,628,891.

Dany, Franz-Josef: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi,3,628,739.

Data Printer Corporation: *See—*
Schaller, Frank H., 3,629,755.

Datran Limited: *See—*
Taylor, Ronald William, 3,629,838.

Daughrty, Wallace B. Carriers for food plates and the like. 3,628,708, Cl. 224-45.

Davis, Frederick B., 3rd; and Ross, Charles W., to Leeds & Northrup Company. Control for power pools. 3,629,562, Cl. 235-151.21

Davis, Robert A.: *See—*
Von Schmeling, Bogislav; Davis, Robert A.; and Relyea, Douglas I.,3,629,438.

Davison, Harry W.: *See—*
Lantz, Edward; and Davison, Harry W.,3,629,068.

Davison, Robert W., to Hercules Incorporated. Nonwoven fabric. 3,629,047, Cl. 161-57.

Davison, Robert W., to Hercules Incorporated. Reinforced paper sheeting. 3,629,048, Cl. 161-57.

Davo, Ronald, to Meca Electronics, Inc. Variable coaxial attenuator. 3,629,742, Cl. 333-81.

Deahl, George L. Door lock protection device. 3,628,356, Cl. 70-449.

Deaver, Danny L. Safety guard for container closures. 3,628,680, Cl. 215-9.

De Boer, Clarence: *See—*
Argonudelis, Alexander D.; De Boer, Clarence; Eble, Thomas E.; and Herr, Ross R.,3,629,406.

Decupper, Jean A., to Detec S.A. Device for measuring the germicidal action of ultra violet radiation. 3,629,587, Cl. 250-83.3

Deegan, James E., to Addressograph-Multigraph Corporation. Multilayer tape for coating intaglio depressions and process for using same. 3,628,977, Cl. 117-11.

Deere & Company: *See—*
Bahl, James Melvin, 3,628,558.

Defensor AG: *See—*
Stoop, Hans Rudolf; and Flury, Karl, 3,628,312.

Dega, Robert L.; and Mandley, Donald J., to General Motors Corporation. O-ring test instrument. 3,628,376, Cl. 73-89.

Degginger, Edward R.; and Balquist, James M., to Allied Chemical Corporation. Process for preparing 5,8-dimethyl-5,6,7,8- tetrahydro-1-naphthols. 3,629,337, Cl. 260-613.

De Keyser, Lodewijk Felix; Herbots, Joseph Antoine; and Thiers, Robrecht Julius, to Gevaert-Agfa N.V. Composite film support. 3,629,054, Cl. 161-182.

De Lano, Merritt V., Jr.: *See—*
McCarthy, William C.; and De Lano, Merritt V., Jr.,3,628,314.

Del Giudice, Frank Paul: *See—*
Lundberg, Robert Dean; Del Giudice, Frank Paul; and Kelso, Robert Gladden,3,629,374.

Della Bella, Davide: *See—*
Teotino, Uberto; Della Bella, Davide; and Ferrari, Vittorio,3,629,435.

De Long, Robert J.; and Gerwitz, Paul F., to Spectrol Electronics Corporation. End closure arrangement for variable resistor. 3,629,777, Cl. 338-149.

Deltaray Corporation: *See—*
Enge, Harald A., 3,629,576.

DeLuca, Paul V., to Porta Systems Corporation. Portable light-weight foldable support platform. 3,628,470, Cl. 108-64.

De Lucia, Victor E., to Torr laboratories, Incorporated. Vacuum relay. 3,629,746, Cl. 335-170.

Del Zotto, Giorgio, to Ates Componenti Elettronici S.p.A. Threshold detector for incident radiation. 3,629,649, Cl. 315-159.

Demaison, Paul; Menissier, Pierre; and Sionnet, Jean, to Societe Industrielle de Combustible Nucleire. Spacer grid for nuclear reactor fuel assembly. 3,629,067, Cl. 176-78.

Demas, Nickolas P., to Wagner Electric Corporation. Insulated filament supports. 3,629,642, Cl. 313-277.

Demer, Frederick M., to International Business Machines Corporation. System having scanner controlled by video clipping level and recognition exception routines. 3,629,828, Cl. 340-146.3

Demer, Frederick M. Character recognition system employing a plurality of character compression transforms. 3,629,833, Cl. 340-146.3

DeMott, Donald N., to Dow Chemical Company, The. Fire-resistant polyester compositions. 3,629,367, Cl. 260-867.

Denenberg, David, Jr., to Sylvania Electric Products Inc. Switching regulator having a low dissipation current overload detection device. 3,629,622, Cl. 307-297.

Denss, Rolf: *See—*
Kuhnis, Hans Herbert; and Denss, Rolf,3,629,426.

Dentsply International Inc.: *See—*
Kroder, Ernest A.; and Glenn, John F., 3,628,248.
Waller, Duncan E., 3,629,187.

Deproux, Jacques Roland, to Societe Industrielle Honeywell Bull. Mechanism for the step-by-step transport of documents. 3,628,713, Cl. 226-157.

Derby, Palmer P.: *See—*
Mims, James R.; and Derby, Palmer P.,3,629,541.

Derham, James J.; and Morgan, Edward R., to Klenzoid, Inc. Automatic control system for cooling towers. 3,628,663, Cl. 210-141.

De Rotterdamsche Droogdok Maatschappij N.V.: *See—*
Bruins, Johannis, 3,628,562.

Derse, Philip H., to Wisconsin Alumni Research Foundation. Method for controlling birds. 3,629,469, Cl. 424-17.

De Rupa, James L., to Dana Corporation. Apparatus for guiding prepunched plates through a roll forming machine. 3,628,361, Cl. 72-181.

Desoto, Inc.: *See—*
Gartner, William J.; and Clark, Charles T., 3,629,116.

De Soto, Inc.: *See—*
Sekmakas, Kazys, 3,629,357.

Desty, Denis H.; and Whitehead, David M., to British Petroleum Company, The. Burner for use with fluid fuels. 3,628,735, Cl. 239-425.5

Desvignes, Francois; Guiochon, Paul; and Pompei, Jean, to U.S. Philips Corporation. Immersed bolometer using thin film thermistors. 3,629,585, Cl. 250-83.

Detec S.A.: *See—*
Decupper, Jean A., 3,629,587.

Deutsch, Norman, to Clare, C. P., & Company. Terminal for assembly into a terminal block. 3,629,811, Cl. 339-220.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Dithmar, Karl; and Koblischek, Peter, 3,628,906.
Schwarze, Werner, 3,629,259.

DeVaney, Fred D., to Shenango Furnace Company, The. Agglomerate of iron ore. 3,628,947, Cl. 75-3.

DeVault, Robert L.: *See—*
Schmitz, Henry; and DeVault, Robert L.,3,629,407.

De Vuyst, Hugo Richard N.: *See—*
Tilmann, Hans-Peter; and De Vuyst, Hugo Richard N.,3,629,809.

Dexter Corporation, The: *See—*
Ryan, William M., 3,629,168.

Dezaki, Masayasu: *See—*
Koike, Kunio; Mito, Akoo; and Dezaki, Masayasu,3,628,674.

Diamond International Corporation: *See—*
Corsette, Douglas F., 3,628,704.

Diamond Shamrock Corporation: *See—*
Horvath, Roland J.; and Parsons, Charles G., 3,629,408.

Diana, Guy D., to Sterling Drug Inc. Method of treating helminthiasis and imidoylurea compositions therefor. 3,629,455, Cl. 424-322.

Diesel Kiki Kabushiki Kaisha: *See—*
Kobayashi, Masayoshi; and Kaneko, Shiro, 3,628,889.

Dietmann, Karl: *See—*
Schaumann, Wolfgang; Dietmann, Karl; and Hardebeck, Klaus,3,629,420.

Dietz, Daniel N., to Shell Oil Company. Oil spill removal method. 3,628,607, Cl. 166-305.

Dietz, Robert E., to Square D Company. Retaining means for operating handle of molded- case electric circuit breaker. 3,629,529, Cl. 200-42.

Dietzel, Walter: *See—*
Kaether, Willy; Dietzel, Walter; and Backofen, Hans-Dieter,3,629,001.

Di Francesco, Alphonse B.; and Boase, Elmer E., to Eastman Kodak Company. Self-cinching reel mechanism. 3,628,746, Cl. 242-74.

Dillon, W. C., & Company, Inc.: *See—*
Dillon, William C., Sr., 3,629,797.

Dillon, William C., Sr., to Dillon, W. C., & Company, Inc. Magnetic signal transmission method and means. 3,629,797, Cl. 340-8.

Dimmick, James Owen; Lewis, Theras Gordon; and O'Neill, John Francis, to Bell Telephone Laboratories, Incorporated. Time division multiplex switching system. 3,629,839, Cl. 340-172.5

Dimon, Donald F., to Infinite Q Corporation. Method and apparatus of infinite Q detection. 3,629,716, Cl. 329-50.

Dinges, Karl: *See—*
Ott, Karl-Heinz; Schuster, Herbert; Dinges, Karl; and Rohr, Harry,3,629,370.

Dioguardi, John: *See—*
Egeland, Haakon G.; and Dioguardi, John,3,628,771.

Diolot, Lucien, to Societe Nouvelle Spidem. Apparatus for positioning a member displaceably mounted in a housing. 3,628,363, Cl. 72-245.

Dithmar, Karl; and Koblischek, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Agent for protecting polyamide fibers or threads against the attack of bleaching and washing baths. 3,628,906, Cl. 8-111.

Dittner, Hans Hermann. Combined packing and partially printing of packing material. 3,628,858, Cl. 355-3.

Dittrich, Volker, to Ciba Limited. Method of combating cotton pests. 3,629,460, Cl. 424-326.

Divijak, Joseph M., Jr., to Atlantic Richfield Company. Production of technical white mineral oil. 3,629,096, Cl. 208-89.

Dixon, Don P. Automobile air conditioning system. 3,628,348, Cl. 62-241.

Dixon, Don P. Automobile air conditioning system. 3,628,349, Cl. 62-243.

Dixon, Guy E., to Panelfold Doors, Inc. Track seal for folding doors with aligned seal flaps. 3,628,588, Cl. 160-40.

Dobbelstein, Arnold; Hille, Hans-Dieter; and Holfort, Horst, to Herberts, Kurt, Dr., & Co. vorm Otto Louis Herberts. Polyesterimides from dicyano diamide-hydrazine reaction products. 3,629,201, Cl. 260-75.

Dobbins, Hugh L. Visual distress signalling system. 3,629,821, Cl. 340-81.

Dobson Gullick Limited, Inc.: *See—*
Gaskell, Joseph; and Hamilton, Terence, 3,628,387.

Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad D., to Dominion Foudries and Steel Limited. Stabilizing high speed railway trucks. 3,628,465, Cl. 105-201.

Doebel, Karl J.; and Gagneux, Andre R., to Ciba-Geigy Corporation. Anti-inflammatory agents and compositions. 3,629,473, Cl. 424-263.

Dogoshi, Noriaki: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.

Dohr, Manfred: *See—*
Krause, Horst-Jurgen; and Dohr, Manfred,3,629,241.

Doi, Toshio: *See—*
Kawabe, Ushio; Kudo, Mitsuhiro; Ishibashi, Masato; and Doi, Toshio,3,629,753.

Dolby, Dale P., to Ampex Corporation. Mount for concave tape guide that clears a loading path. 3,629,515, Cl. 179-100.2

Domaf N.V.: *See—*
Glassbergen, Jan Willem Cornelis, 3,628,506.

Domenico, Penelop B., to Dow Chemicals Company, The. Substituted polyhalo-4-nitropyridines. 3,629,281, Cl. 260-294.8

Dominik, Jurgen G.; Presson, Robert D.; and Wysocki, Carl G., to Standard Oil Company, The (Ohio). Iron-modified bismuth phosphomolybdate catalyst. 3,629,148, Cl. 252-437.

Dominion Foudries and Steel Limited: *See—*
Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad D., 3,628,465.

Donnaker, Clarence W.: *See—*
Biddison, John M.; and Donnaker, Clarence W.,3,628,229.

Donoghue, Robert J. Pre-measured liquid spray and foam dispenser. 3,628,700, Cl. 222-207.

Donohue, Francis X., to Tampex Incorporated. Catamenial tampon and method. 3,628,534, Cl. 128-285.

Donohue, James P.: *See—*
McFeaters, Earl W.; and Donohue, James P.,3,628,645.

Dopera, Rudolph. Decorative device for use as a decorative inlay in surface. 3,629,045, Cl. 161-5.

Dorfuss, Gerald E.: *See—*
Dancis, Douglas E.; Dorfuss, Gerald E.; and Zitron, Benjamin C.,3,629,844.

Dorken, August: *See—*
Malz, Hugo; Grewe, Ferdinand; Dorken, August; and Kaspers, Helmut,3,629,458.

Dorrell, Robert F., to Bunker-Ramo Corporation, The. Wire seals. 3,629,792, Cl. 339-60.

Doughton, George E., to Doughton Manufacturing Company, Inc. Fluid operated motor. 3,628,419, Cl. 91-224.

Doughton Manufacturing Company, Inc.: *See—*
Doughton, George E., 3,628,419.

Douglas, Bobby E. Headgear for wrestlers. 3,628,191, Cl. 2-3.

Douglas, Ellwood S.; and Wahlgren, Wallace W., to Rucker Company, The. Coupling transformer assembly. 3,629,759, Cl. 336-82.

Dovey, Geoffrey: *See—*
Olive, Martin Frederick; and Dovey, Geoffrey,3,629,351.

Dow Chemical Company, The: *See—*
DeMott, Donald N., 3,629,367.
George, Percy F., 3,629,091.
George, Percy F., 3,629,092.
Griffith, Jeffrey D., 3,629,422.
Moore, Carl; and Louch, James B., 3,629,175.
Morris, Leo R., 3,629,344.
Pande, Kailash C., 3,629,264.
Pews, Richard Garth; Hand, Clare R.; and Roberts, Carleton W., 3,629,315.
Torba, Florence E., 3,629,424.
Walles, Wilhelm E., 3,629,025.

Dow Chemicals Company, The: *See—*
Domenico, Penelop B., 3,629,281.

Dow Corning Corporation: *See—*
Antonen, Robert C., 3,629,297.
Hartlein, Robert C.; and Olson, Carl R., 3,629,228.
Kim, Yung Ki; and Pierce, Ogden R., 3,629,115.
Quaal, George J.; Schaefer, William L.; and Kelly, Robert J., 3,629,106.
Weber, Carl D., 3,628,996.

Dow Jones & Company, Inc.: *See—*
Green, Donald W., 3,628,568.

Dowson, Lucy Gwyneth, to D. P. (Inserts) Limited. Drip preventing device for bottle. 3,628,697, Cl. 222-111.

Doyle, William C., Jr., to Gulf Research & Development Company. Selectively herbicidal 3-substituted-2-halopropyl thiolcarbamates and method of combating undesired vegetation. 3,628,945, Cl. 71-100.

D. P. (Inserts) Limited: *See—*
Dowson, Lucy Gwyneth, 3,628,697.

Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-Diaryl-pyridyl-methylimidazoles, salts thereof. 3,629,273, Cl. 260-296.

Drage, James John; and Kitz, Norbert, to Bell Punch Company Limited. Calculating machines with a constant function key. 3,629,564, Cl. 235-159.

Drake, William O., to Phillips Petroleum Company. Stabilization of radial teleblock copolymers. 3,629,372, Cl. 260-880.

Dreher, Bernd: *See—*
Heer, Alfred; Schneider, Wolfgang; and Dreher, Bernd,3,629,181.

Drenkelfort, Hans, to Electroacustic Gesellschaft m.b.H. Method and apparatus for echo-sounding of short distances. 3,629,813, Cl. 340-3.

Drew, Harry. Smoker's pipe cover. 3,628,542, Cl. 131-176.

Driscoll, Patrick R., to Mobil Oil Corporation. Thiadiazolyl ureas as systemic fungicides. 3,629,429, Cl. 424-270.

Driscoll, Patrick R., to Mobil Oil Corporation. Bactericidal compositions containing substituted nitropyridines. 3,629,472, Cl. 424-263.

Driver, Wilbur B., Company: *See—*
Wang, Teh Po, 3,628,949.

Dror, Meir: *See—*
Leuw, David; and Dror, Meir,3,628,824.

Drori, Moshe, to Lucas, Joseph, (Industries) Limited. Liquid fuel pumping apparatus. 3,628,895, Cl. 417-458.

Duiker, Marion A. Dispenser for flexible wall tube containers. 3,628,696, Cl. 222-99.

Dunlop Company Limited, The: *See—*
Riley, Raymond A., 3,628,404.

Duperroy, Marcel: *See—*
Plumat, Emile; and Duperroy, Marcel,3,628,936.

Du pont de Nemours, E. I., and Company: *See—*
Apotheker, David; and Hirsty, Sylvain M., 3,629,210.
Bigliano, Robert P., 3,628,526.
Boughton, Donald Clarke; and Meier, Walter E., 3,629,333.
Bowyer, Kern M., 3,629,795.
Breda, Ernest John, 3,629,363.
Bristol, John E., 3,629,179.
Broyles, Ben L., 3,628,718.
Burkhart, Dean C.; Conrad, Lee R.; and Stokes, John B., III, 3,629,360.
Esker, Richard B., 3,629,219.
Haugh, Eugene Frederick, 3,628,956.
Lyerly, William M., 3,629,021.
Ripka, William C., 3,629,301.
Scribner, Richard M., 3,629,439.
Selman, Stanley; and Squire, Edward N., 3,629,323.
Shannon, Robert D., 3,629,156.
Stiehl, Roy Thomas, Jr., 3,629,197.
Uhland, Keith L., 3,628,913.
Webster, Owen Wright, 3,629,318.

Dupont-Roc, Jacques A.: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude,3,629,697.

Durland, Douglas H., to Beckman Instruments Inc. Digitally controlled pulse generator. 3,629,710, Cl. 328-58.

Duro-Test Corporation: *See—*
Cortorillo, Salvatore, 3,628,846.
Trutner, Donald G., 3,628,939.

Duss, John J., Jr.: *See—*
Cvacho, Daniel S.; Duss, John J., Jr.; and Lee, Harvy W., Jr.,3,628,368.

Duthoit, Jean, to Glaverbel S.A. Temperature control of chemical tempering of solid glass or vitrocrystalline bodies. 3,628,934, Cl. 65-30.

Dwars, Wilhelmus Theodorus Albertus: *See—*
Riem, Roland Hendrik; and Dwars, Wilhelmus Theodorus Albertus,3,629,055.

Dymond, Richard Warren, to TRW Inc. Power brake booster. 3,628,423, Cl. 91-376.

Dynamit Nobel Aktiengesellschaft: *See—*
Bier, Gerhard; Trautvetter, Werner; and Weisgerber, Gregor, 3,629,218.
Buning, Robert; and Kotzsch, Hans-Joachim, 3,629,214.

Eagle-Picher Industries, Inc.: *See—*
Clark, Fred E., 3,628,712.
Stephenson, Harry B.; Clapson, William J.; and Wolkar, Edwin L., 3,629,206.

Earp, Ronald Lee, to Bell Telephone Laboratories, Incorporated. Electronqc sampling and hold circuit. 3,629,714, Cl. 328-151.

Easterly, Donald O.; and Stark, Daniel J., to Eastman Kodak Company. Film feeding mechanism. 3,628,748, Cl. 242-192.

Eastman Kodak Company: *See—*
Brauning, Gerhard; and Ort, Wolfgang, 3,628,751.
Coover, Harry W., Jr.; and Joyner, Frederick B., 3,629,222.
Cullen, Robert E., 3,629,840.
Czarnikow, George K.; and Owen, William S., 3,628,440.
Di Francesco, Alphonse B.; and Boase, Elmer E., 3,628,746.
Easterly, Donald O.; and Stark, Daniel J., 3,628,748.
Edwards, Evan A., 3,628,752.
Ettischer, Helmut, 3,628,432.
Ettischer, Helmut; and Blattner, Dietmar, 3,629,793.
Fessenden, John R.; and Wenthe, Stephen J., 3,628,864.
Gilkey, Russell; and Wicker, Thomas Hamilton, 3,629,202.
Haefner, John A., 3,628,958.
Haist, Grant M.; and Pupo, David A., 3,628,955.
Harvey, Donald M., 3,628,855.
Harvey, Donald M., 3,628,857.
Hull, David C.; Hagemeyer, Hugh J., Jr.; and Etter, Raymond L., Jr., 3,629,186.
Jungjohann, Vernon H.; Adamski, Henry S.; and Richardson, Stephen M., 3,628,856.
Kottler, Franklin D.; and Leutung, Frederick K., 3,628,863.
Martin, William A., 3,628,711.
Martin, William A., 3,628,744.
Morse, John E., 3,628,430.
Nerwin, Hubert, 3,628,435.
Oliver, Gene L., 3,629,274.
Ort, Wolfgang; and Brauning, Gerhard, 3,628,749.
Perez-Albuerne, Evelio A., 3,629,158.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J., 3,628,750.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J., 3,628,750.
Wenthe, Stephen J.; and Shute, Charles F., 3,628,840.
Yackel, Edward C., 3,628,978.

Easton, Rufus; and Botta, Jose A., Jr., to Koppers Company, Inc. Contoured mold for horizontal continuous casting. 3,628,596, Cl. 164-283.

Eaton Yale & Towne, Inc.: *See—*
O'Callaghan, Gerald F., 3,629,633.

Soberski, George A., 3,628,517.

Ebauches S.A.: *See—*
Chopard, Remy; and Besson, Rene, 3,628,324.
Engdahl, Jean, 3,629,709.

Eberlein, Wolfgang; Heider, Joachim; Machleidt, Hans; and Engelhardt, Gunther, to Boehringer Ingelheim G.m.b.H.Estradiol-17β-rhamnosides. 3,629,234, Cl. 260-210.5

Eberly, David H., Jr., to United States Banknote Corporation. Offset mister air die. 3,628,454, Cl. 101-147.

Eble, Thomas E.: *See—*
Argonudelis, Alexander D.; De Boer, Clarence; Eble, Thomas E.; and Herr, Ross R.,3,629,406.

ECC Corporation: *See—*
Reviel, Benny L., 3,629,534.

Echigoya, Etsuro: *See—*
Morikawa, Kiyoshi; Echigoya, Etsuro; Shirasaki, Takayasu; and Furuoya, Itsuo,3,629,145.

Eckert, George W.; and Cadorette, Raymond, to Texaco Inc. Cyclic imines as biocides in petroleum products. 3,628,926, Cl. 44-63.

Eckert, Konrad: *See—*
Knapp, Heinrich; and Eckert, Konrad,3,628,515.

Economy, James; Frechette, Francis J.; and Wohrer, Luis C., to Carborundum Company, The. Flame resistant cloth. 3,628,995, Cl. 117-138.8

Eden, Jamal S., to Goodrich, B. F., Company, The. Oxidation catalyst and process. 3,629,147, Cl. 252-437.

Edging, John D., 60% to Edging, Lila Lee. Heating device for parenteral fluid. 3,629,552, Cl. 219-302.

Edging, Lila Lee: *See—*
Edging, John D., 3,629,552.

Edwards, Christopher J. C.; La Branche, Harvey W.; and Soulakis, George, to Mattel, Inc. Compact toy lap counter. 3,628,725, Cl. 235-99.

Edwards, Derek Reginald: *See—*
Swampillai, Christy Edward Selvanayagam; and Edwards, Derek Reginald,3,629,486.

Edwards, Evan A., to Eastman Kodak Company. Device for stripping and feeding strip material from a roll. 3,628,752, Cl. 242-192.

Edwards High Vacuum International Limited: *See—*
Jackson, Geoffrey Norman; and Priestland, Colin Richard Douglas, 3,629,095.

Edwards, James W., to Monsanto Company. Foamed surface patterns. 3,629,380, Cl. 264-53.

Edwards, Ray C. Valance heating and cooling device. 3,628,599, Cl. 165-22.

Egeland, Haakon G.; and Dioguardi, John. Scissors-type lifting linkage elevator. 3,628,771, Cl. 254-122.

Egri, Laszlo: *See—*
Buchmann, Paul; Egri, Laszlo; and Beringer, Monique,3,628,541.

Egysesult Gyogyszer-es Tapszergyar: *See—*
Benko, Pal; Pallos, Laszlo; Vaczi, Lajos; Komlos, Endre; and Ordogh, Ferenc, 3,629,334.

Eheim, Franz, to Bosch, Robert, G.m.b.H. Fuel injection pump for internal combustion engines. 3,628,892, Cl. 417-292.

Ehrat, Kurt, to Ciba-Geigy AG. Operating member selection system. 3,628,723, Cl. 234-115.

Eickelberg, Henry L.: *See—*
MacNeill, Samuel G.; and Eickelberg, Henry L.,3,628,598.

Eilingsfeld, Heinz; and Scheuermann, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2,4-disubstituted triazines. 3,629,254, Cl. 260-248.

Eisai Kabushiki Kaisha: *See—*
Okubo, Teruo, 3,629,074.

Ekwall, Per Anders: *See—*
Andersson, Herbert Olof; and Ekwall, Per Anders,3,629,066.

El Paso Products Company: *See—*
Hatten, Jimmy L.; and Nauck, Kurt Rudolph, Jr., 3,629,316.

Eldib, Ibrahim A. Carboxylated starches as detergent builders. 3,629,121, Cl. 252-89.

Electroacustic Gesellschaft m.b.H.: *See—*
Drenkelfort, Hans, 3,629,813.

Electrogenics, Inc.: *See—*
Sickels, David W., 3,629,093.

Electronic Communications, Inc.: *See—*
Walker, Neil Edward, 3,629,616.

Elgenstierna, Reinhold Magnus, to Tegelindustriens Centralkontor AB. Method for forming composite building elements. 3,629,384, Cl. 264-130.

Elkind, Vincent Theodore; and Hunter, Robert Tweedy, to Colgate-Palmolive Company. Method and means for treating fibrous materials and articles produced thereby. 3,628,997, Cl. 117-121.

Elmquist, Lyle E.: *See—*
Jonaitis, Charles W.; and Elmquist, Lyle E.,3,629,319.

Elteto, Louis. Violin-piano. 3,628,414, Cl. 84-257.

Embree, William H., to Polymer Corporation Limited. Mastication of 2-alkyl butadiene-1,3-acrylic nitrile copolymer. 3,629,373, Cl. 260-894.

Emerson, Carl D.; and Aichenegg, Paul C., to Chemagro Corporation. Carbonates and thio carbonates of polyhalodisulfide alcohols. 3,629,312, Cl. 260-455 .

Emerson, Carl D.; and Aichenegg, Paul C., to Chemagro Corporation. Sulfur containing carboxylic acid thioesters as pesticides. 3,629,313, Cl. 260-455.

EMI Limited: *See—*
Starkey, Bertrand Julian; and Watson, Alexander Smith, 3,628,205.

Empire Stove Company: *See—*
Hodges, Ralph R., 3,628,521.

Emrick, Donald D.: *See—*
Bayless, Robert G.; Emrick, Donald D.; and Hart, Ronald L.,3,629,140.

Energy Conversion Devices, Inc.: *See—*
Neale, Ronald G., 3,629,863.

Engdahl, Jean, to Ebauches S.A. Electronic frequency converter. 3,629,709, Cl. 328-15.

Enge, Harald A., to Deltaray Corporation. Accelerator tube electrode for focusing a beam of charged particles. 3,629,576, Cl. 250-49.5

Engelhardt, Gunther: *See—*
Eberlein, Wolfgang; Heider, Joachim; Machleidt, Hans; and Engelhardt, Gunther,3,629,234.

Engelke, Wilhelm: *See—*
Trassl, Werner; Engelke, Wilhelm; and Remberg, Axel,3,628,878.

Engineering Developments Limited: *See—*
Van Langenhoven, Jules E., 3,628,272.

English Electric Company Limited, The: *See—*
Paddison, Eric; and Simpson, Michael Charles Stephen, 3,629,657.

Englund, Gosta R.; Mattsson, Mats E.; and Lindelow, Claes-Goran, to Svenska Dataregister AB. Signal convertor. 3,629,563, Cl. 235-154.

Enkoji, Takashi: *See—*
Bossinger, Charles D.; and Enkoji, Takashi,3,629,467.

Enneking, Heinrich; and Jahrig, Gunter, to Industrie-Werke Karlsruhe Aktiengesellschaft. Device for winding textile threads. 3,628,741, Cl. 242-18.

Ensminger, Ada Lucille. Sectional hairpieces. 3,628,546, Cl. 132-53.

Ephraim, Max, Jr.; and Smith, Earl D., to General Motors Corporation. Traction motor temperature control of locomotive power. 3,629,676, Cl. 318-144.

Erb, George H., to American Velcro, Inc. Method for making flexible strips of material having on one surface thereof a pile of upstanding hooking elements. 3,629,032, Cl. 156-196.

Erb, Herbert; Marionek, Erhard; and Steinbach, Walter, to Pfaff, G. M., AG. Device for sewing plush fabrics or furs. 3,628,475, Cl. 112-149.

Erickson, Lowell H.: *See—*
Fogelberg, Clement V.; and Erickson, Lowell H.,3,629,382.

Eriksen, Erik Norgaard: *See—*
Simonsen, Knud; Sondergaard, Soren; and Eriksen, Erik Norgaard,3,628,218.

Ernest, Michael V.: *See—*
Kawam, Antoine; and Ernest, Michael V.,3,629,184.

ESB Incorporated: *See—*
Hills, Stanley, 3,629,006.
Johnson, Martin H., 3,629,154.

Esker, Richard B., to Du Pont de Nemours, E. I., and Company. Process for increasing the surface area of granular polytetrafluoroethylene resin. 3,629,219, Cl. 260-92.1

Esso Production Research Company: *See—*
Chenevert, Martin E., 3,628,615.
Childers, Mark A.; and Bruce, George H., 3,628,604.
Larralde, Edward; Weber, Ronald A.; Hancs, James W. E.; and Childers, Thomas W., 3,628,812.

Esso Research and Engineering Company: *See—*
Beals, Charles D.; Fitzpatrick, George I.; and O'Hara, Kim L., 3,628,918.
Geissler, Paul R.; and Magee, Ellington M., 3,628,940.
Langer, Arthur W., Jr.; and White, Herschel T., 3,629,355.
Segura, Marnell A.; Savage, Henry R.; and Burroughs, John L., 3,628,986.

Esteve-Subirana, Antonio, to Laboratories Om S.A. Lithium salt of hydroquinone sulfonic acid. 3,629,327, Cl. 260-512.

Etablissement Public: Agence Nationale de Valorisation de la Recherche 'Anvar':*See—*
Nomarski, Georges, 3,628,848.

Ethyl Corporation: *See—*
Beard, William Q., Jr., 3,629,354.
Lehikoinen, Urho Albert, 3,629,129.
Rains, John Henry, 3,629,128.

Etter, Raymond L., Jr.: *See—*
Hull, David C.; Hagemeyer, Hugh J., Jr.; and Etter, Raymond L., Jr.,3,629,186.

Ettinger, Robert H., to Sprague Electric Company. Support and seal for a drive means. 3,628,560, Cl. 137-312.

Ettischer, Helmut, to Eastman Kodak Company. Film metering mechanism. 3,628,432, Cl. 95-31.

Ettischer, Helmut; and Blattner, Dietmar, to Eastman Kodak Company. Battery compartment. 3,629,793, Cl. 339-91.

Eue, Ludwig: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth,3,629,275.

European Atomic Energy Community (Euratom): *See—*
Agazzi, Alberto; Broggi, Armando; Galli de Paratesi, Sergio; and Ghiurghi, Luciano, 3,629,059.

Everburg, Donald E., to American Optical Corporation. Unitary hinge and spring member. 3,628,215, Cl. 16-150.

Evers, William J., to International Flavors & Fragrances Inc. Process for the preparation of 2,5-dicalkyl hydroxy-(2H)-furan-3-ones. 3,629,292, Cl. 260-347.8
Ex-Cell-O Corporation: *See—*
Allen, Robert J.; Martin, Philip C.; and Urbonas, Vacys, 3,628,698.
Eyrich, Werner, to Gesellschaft fur Kernforschung mbH. Neutron generator. 3,629,588, Cl. 250-84.5
Faber, Ulbe, to Burroughs Corporation. Computer input buffer memory including first in- first out and first in-last out modes. 3,629,857, Cl. 340-172.5
Fabrique Movado: *See—*
Polo, Raymond, 3,628,326.
Fabriques de Montres Zenith S.A.,: *See—*
Polo, Raymond, 3,628,326.
Fahlenberg, Paul, to Compur-Werk Gesellschaft mit beschrankter Haftung & Co. Photographic camera. 3,628,437, Cl. 95-53.
Fairchild, Charles M.: *See—*
Kabacoff, Bernard L.; and Fairchild, Charles M.,3,629,331.
Fairing, John D., to Monsanto Company. Functional fluid compositions. 3,629,114, Cl. 252-49.8
Fairing, John D., to Monsanto Company. Functional fluid compositions. 3,629,120, Cl. 252-78.
Fanchamps, Albert; and Taeschler, Max, to Sandoz Ltd., a/k/a Sandoz AG. Tranquilizing compositions and methods. 3,629,471, Cl. 424-247.
Fannin, Wayne V.: *See—*
Dafler, Gene L.; and Fannin, Wayne V.,3,629,627.
Dafler, Gene L.; and Fannin, Wayne V.,3,629,634.
Fapiano, Donald J.; and Norton, Allyn S., Jr., to General Electric Company. Method of revising workpiece temperature estimates or measurements using workpiece deformation behavior. 3,628,358, Cl. 72-8.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Beck, Gunther; and Holtschmidt, Hans, 3,629,261.
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred, 3,629,273.
Frohberger, Paul-Ernst; Kuhle, Engelbert; and Urbschat, Otto Ewald, 3,629,446.
Horstmann, Harald; Wollweber, Hartmund; and Meng, Karl, 3,629,442.
Kirschnek, Helmut; Hildebrand, Dietrich; Hendricks, Udo-Winfried; Meier, Gerhard; and Quaedvlieg, Mathieu, 3,628,905.
Klotz, Gunther; and Schwarz, Hans Helmut, 3,628,341.
Malz, Hugo; Grewe, Ferdinand; Dorken, August; and Kaspers, Helmut, 3,629,458.
Meckel, Walter; and Muller, Erwin, 3,629,227.
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,629,275.
Metzner, Wolfgang; and Peilstocler. Gunter, 3,629,193.
Ott, Karl-Heinz; Schuster, Herbert; Dinges, Karl; and Rohr, Harry, 3,629,370.
Schrader, Gerhard; Mannes, Karl; and Scheinpflug, Hans, 3,629,411.
Urbschat, Ewald; and Frohberger, Paul-Ernst, 3,629,456.
Farbwerke Hoechst Aktiengesellschaft Meister Lucius & Bruning: *See—*
Nolken, Ernst, 3,629,163.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Brinkmann, Ludwig, 3,629,366.
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich, 3,629,196.
Hille, Martin; and Ulmschneider, Dieter, 3,629,101.
Schafer, Gustav; and Trombetta, Adam, 3,629,248.
Fargo Mfg. Co., Inc.: *See—*
Wiechmann, Wayne C., 3,629,806.
Farrell, Frank C.: *See—*
Snaper, Alvin A.; and Farrell, Frank C.,3,628,601.
Snaper, Alvin A.; and Farrell, Frank C.,3,628,852.
Farwell, Roy, to Clutsom-Penn International Limited. Means for controlling guide bars in warp knitting machines. 3,628,354, Cl. 66-86.
Fastre, Joseph Jules Jacques, to U.S. Philips Corporation. Ultrasonic welding device with suction rod for treating microsemiconductor blocks. 3,628,716, Cl. 228-1.
Fedders Corporation: *See—*
Williams, Donald F.; and Cox, Gerald H., 3,628,762.
Federal Business Products, Inc.: *See—*
Wise, Lester V.; and Gripekoven, Henry A., 3,628,266.
Federal Pacific Electric Company: *See—*
Forier, Jean R.; and Moskowitz, Paul M., 3,629,771.
Fortier, Jean R.; and Moskowitz, Paul M., 3,629,770.
Feige, Edgar P., to General Electric Company. Commutation direction circuit. 3,629,613, Cl. 307-353.
Feiner, Alexander, to Bell Telephone Laboratories, Incorporated. Unbalanced and balanced switching network for balanced transmission circuits. 3,629,513, Cl. 179-18.
Feldl, Erich J. Rotating pencil-compass. 3,628,251, Cl. 33-27.
Feldman, Carles L. Lower velocity wind tunnel. 3,628,380, Cl. 73-147.
Fellows Gear Shaper Company, The: *See—*
Tlaker, Erich, 3,628,359.
Fenichel, Richard L.; and Alburn, Harvey E., to American Home Products Corporation. Method for diagnosing diabetes. 3,629,391, Cl. 424-9.
Fenstermaker, Lloyd J., to United States Steel Corporation. Method for hot rolling plate. 3,628,364, Cl. 72-227.
Ferguson, John H., Jr.; and Woodruff, Frank, to Bendix Corporation, The. High vacuum mechanical pump. 3,628,894, Cl. 417-353.
Ferrania, S.p.A.: *See—*
Franco, Simone; and Marini, Manlio, 3,628,957.
Ferrari, John L.: *See—*
Bader, Henry; and Ferrari, John L.,3,629,272.
Ferrari, Vittorio: *See—*
Teotino, Uberto; Della Bella, Davide; and Ferrari, Vittorio,3,629,435.
Ferrigan, Richard V., to GAF Corporation. Liquid recirculating and weighing system. 3,628,617, Cl. 177-116.
Fessenden, John R.; and Wenthe, Stephen J., to Eastman Kodak Company. Apparatus for forming a developable pattern on light-sensitive film carried in a cassette. 3,628,864, Cl. 355-18.
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., to Westinghouse Electric Corporation. Recurrent arc heating process. 3,629,553, Cl. 219-383.
Fichtel & Sachs Aktiengesellschaft: *See—*
Axthammer, Ludwig, 3,628,637.
Fiedler, Howard C., to General Electric Company. Hard surfacing of steels. 3,629,014, Cl. 148-31.5
Field, Arthur K.: *See—*
Lampson, George P.; Field, Arthur K.; and Tytell, Alfred A.,3,629,235.
Fieni, Walter, to Societe Anonyme Francaise du Ferodo. Multitubular heat exchanger. 3,628,603, Cl. 165-151.
Finch, Neville: *See—*
Gschwend, Heinz Werner; and Finch, Neville,3,629,433.
Findley, Joseph D., Jr., to Westinghouse Electric Corporation. Electromagnetic trip device for circuit interrupters. 3,629,747, Cl. 335-174.
Fink, Irving E. Inverters. 3,629,688, Cl. 321-50.
Finne, Paul C.: *See—*
King, Philip E.; and Finne, Paul C.,3,629,732.
Firester, Arthur H., to United States of America, Army. High-resolution optical up-converter. 3,629,601, Cl. 307-88.3
Firester, Arthur H., to United States of America, Army. Parametric optical system. 3,629,602, Cl. 307-88.3
Firestone Tire & Rubber Company, The: *See—*
Keckler, Norman F., 3,629,223.
Fischer, Hans, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Piston for internal combustion engine with direct fuel injection. 3,628,511, Cl. 123-41.35
Fischer, Jules. Electric safety switch apparatus. 3,629,530, Cl. 200-44.
Fish, John Gaylord, to Texas Instruments, Incorporated. Methods of using acetal-containing organosilicon compositions to improve the water-repellency of cellulose containing materials. 3,628,907, Cl. 8-120.
Fisher, Reed E.: *See—*
Barber, Mark R.; and Fisher, Reed E.,3,629,739.
Fisons Pharmaceuticals Limited: *See—*
Cairns, Hugh; Hazard, Richard; and King, John, 3,629,290.
Fitz, Egon: *See—*
Wagner-Jauregg, Theodor; and Fitz, Egon,3,629,253.
Fitzpatrick, George I.: *See—*
Beals, Charles D.; Fitzpatrick, George I.; and O'Hara, Kim L.,3,628,918.
Flamand, Jean; Labeyrie, Antoine; and Pieuchard, Guy, to Jobin, A., & G. Yvon Instruments de Precision. Diffraction gratings. 3,628,849, Cl. 350-162.
Flamini, Joseph D., Jr., to GTE Automatic Electric Laboratories, Incorporated. Subscriber's holding circuit. 3,629,514, Cl. 179-99.
Flanagan, Kenneth J.: *See—*
Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A.,3,629,322.
Flanagan, Thomas L., to Wagner Research Corporation. Flat article processing apparatus. 3,628,476, Cl. 112-147.
Fleisher, Martin. Stopper removing implement. 3,628,405, Cl. 81-3.42
Fleming, Jack Fairchild, to Sterling Plastics Company. Perpetual calendar. 3,628,270, Cl. 40-113.
Flex-Step, Inc.: *See—*
Sherman, Harvey George, 3,628,608.
Florasynth, Inc.: *See—*
Toussaint, Norbert Francis, 3,628,967.
Florent, Jean Edmond Marie; Mancy, Denise; and Verrier, Jean, to Rhone-Poulence S.A. Enzyme inhibitors 19,042 R.P., 21,052 R.P. and 21,053 R.P.. 3,629,404, Cl. 424-117.
Flury, Karl: *See—*
Stoop, Hans Rudolf; and Flury, Karl,3,628,312.
FMC Corporation: *See—*
Battista, Orlando A., 3,628,974.
Billett, Ronald J., 3,628,657.
Fogelberg, Clement V.; and Erickson, Lowell H., to Ball Corporation. Method for programming parisons. 3,629,382, Cl. 264-98.
Folkens, Dieter: *See—*
Sobottka, Dieter; and Folkens, Dieter,3,629,754.
Ford, Arthur W., Sr. Carton with handling means. 3,628,719, Cl. 229-52.
Ford Motor Company: *See—*
Bishop, Irving N.; and Repko, Louis L., 3,628,564.
Brewer, George E. F.; and Swider, Robert A., 3,629,086.
Close, Albert R., 3,628,831.
Graef, Kurt, 3,628,810.

Holzwarth, Robert W., 3,629,783.
Mathey, Charles J., 3,629,606.
Ross, Peter M., Jr., 3,628,816.
Savell, Charles L., 3,628,216.
Sheahan, Edward J.; and Staisil, Donald F., 3,628,817.
Stockton, Thomas R., 3,628,623.
Valukonis, Jonas, 3,628,634.
Wu, Tao-Yuan, 3,628,512.

Fordyce, William Fulmer; and Mitchell, Edmund John, to RCA Corporation. Orthogonal filters. 3,629,721, Cl. 330-107.

Forier, Jean R.; and Moskowitz, Paul M., to Federal Pacific Electric Company. Thermostat with stable bimetal support. 3,629,771, Cl. 337-372.

Foris, Stephen A.: *See—*
Manowitz, Milton; Walter, George R.; and Foris, Stephen A.,3,629,465.

Forrest, George, to Beloit Corporation. Apparatus for forming high bulk tissue having a pattern imprinted thereon. 3,629,056, Cl. 162-305.

Forst, Willi: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi,3,628,739.

Fortier, Jean R.; and Moskowitz, Paul M., to Federal Pacific Electric Company. Thermostat with stable switch mount. 3,629,770, Cl. 337-333.

Foss, N., Electric A/S: *See—*
Werner, Hanne, 3,628,916.

Foster Bros. Manufacturing Company: *See—*
Helton, William J., 3,628,199.
Helton, William J., 3,628,200.

Foster, David R. Anti-inflammatory medicinal preparation. 3,629,401, Cl. 424-95.

Foster Wheeler Corporation: *See—*
Roberts, Daniel F. T., 3,629,539.

Fowler, Wanda L. Culinary utensil. 3,628,819, Cl. 294-50.

Foxboro Company, The: *See—*
Purnell, John Howard, 3,628,310.

Frach, Werner; and Janke, Bernhard, said Janke assor. to said Frach. Devices for operating windows. 3,628,426, Cl. 92-138.

Francis, John E., to Geigy Chemical Corporation. Derivatives of 9-aminoalkyl-1,2,8,9- tetraazaphenalenes. 3,629,251, Cl. 260-247.1

Franco, Simone; and Marini, Manlio, to Ferrania, S.p.A. Gelatino-silver halide emulsions containing water soluble acrylamide copolymers. 3,628,957, Cl. 96-87.

Frank, Arlen W.; and Baranauckas, Charles F., to Hooker Chemical Corporation. Perfluoro-1-cycloalken-1,2-ylene-diphosphoryl compounds and process for the preparation thereof. 3,629,326, Cl. 260-502.4

Frank, Robert I.; and Moberg, William L., to Sperry Rand Corporation. Sputtering method for deposition of silicon oxynitride. 3,629,088, Cl. 204-192.

Frank, W. R., Packaging Engineers, Inc.: *See—*
Cranfill, John D., 3,629,042.

Franke, Willy: *See—*
Leitz, Ludwig; and Franke, Willy,3,628,434.

Frankel, Milton B.; and Ogimachi, Naomi N., to United States of America, Air Force. Perfluoro aliphatic esters. 3,629,324, Cl. 260-485.

Franklin Gno Corporation: *See—*
Carroll, David I., 3,629,574.

Fraser, Cameron R.: *See—*
O'Neil, Kevin B.; Fraser, Cameron R.; and Helms, Paul E., Jr.,3,628,587.

Fraunfelder, James A.; Getz, Frank C., Jr.; Kauffman, Sidney L., Jr.; and Kurlans, William H., to Gulf & Western Systems Company, mesne. Coded signal communication system. 3,629,837, Cl. 340-171.

Frechette, Francis J.: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C.,3,628,995.

Frederick, Phyllis; and Zimmerman, Charles R., to Mattel, Inc. Game apparatus involving magnetized selection of game pieces. 3,628,792, Cl. 273-1.

Fredricks, Simon. Mammary support. 3,628,539, Cl. 128-427.

Frericks, Donald E.: *See—*
Mayer, Endre A.; and Frericks, Donald E.,3,628,551.

Frey, Cleon F.; and Melvin, Myron F., to Comcl International Corporation. Circuit breaker with external heater. 3,629,764, Cl. 337-91.

Frick, Richard H., to Kimberly-Clark Corporation. Method for forming disposable diapers. 3,629,039, Cl. 156-269.

Fried, John H., to Syntex Corporation. 6-Gem-difluoro steroids. 3,629,242, Cl. 260-239.55

Friedrich, Wolfgang Erhard. Collapsible box. 3,628,683, Cl. 220-6.

Fries, Walter; Puchta, Rolf; Nagel, Horstmar; and Gundel, Wolfgang, deceased0 (by Gundel, Maria-Luise Elsa; heir and legal representative), to Henkel & Cie GmbH. Liquid detergent composition. 3,629,126, Cl. 252-137.

Fritzsche, Alfred O., to Armco Steel Corporation. Drive system for strip accumulator. 3,628,742, Cl. 242-55.

Fritzsche Dodge & Olcott Inc.: *See—*
Kulka, Kurt, 3,629,314.

Frohberger, Paul-Ernst; Kuhle, Engelbert; and Urbschat, Otto Ewald, deceased0 (by Urbaschat, Gertrud Emma Maria Gerda; heiress), to Farbenfabriken Bayer Aktiengesellschaft. Method of combating fungic of genus ustilago. 3,629,446, Cl. 424-289.

Frohberger, Paul-Ernst: *See—*
Urbschat, Ewald; and Frohberger, Paul-Ernst,3,629,456.

Frolovtsev, Vasily Alexandrovich: *See—*
Ivashkov, Ilya Ilich; and Frolovtsev, Vasily Alexandrovich,3,628,392.

Frowein, Egbertus Adrianus, to N.V. 'COQ'. Metal clad switchgear for high voltage comprising compartments adapted to be divided by movable transverse partition walls. 3,629,661, Cl. 317-103.

Fruehauf, Waldo G.; and Rue, Robert W., to General Signal Corporation. Hydraulic power circuits employing remotely controlled directional control valves. 3,628,424, Cl. 91-446.

Fry, Franklin Hornor, to American Can Company. Air cooled laser processing of materials. 3,629,546, Cl. 219-121.

Fry, William Lawrence, to Lucas, Joseph, (Industries) Limited. Contact breaker assemblies with improved contact breaker arm retaining means. 3,629,527, Cl. 200-19.

Frye, George J., to Textronix, Inc. Sampling system. 3,629,731, Cl. 333-7.

Frystak, Richard: *See—*
Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R.,3,628,753.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Katayama, Hideo, 3,629,757.

Fuji Shashin Film Kabushiki Kaisha: *See—*
Kamada, Hatohiko; and Tashiro, Kouich, 3,628,990.
Shiba, Keisuke; and Sato, Akira, 3,628,964.

Fuji Shashin Koki Kabushiki Kaisha: *See—*
Furusawa, Motoyoshi, 3,628,439.

Fujikawa, Sukeyoshi, to Teac Corporation. Tape magazine loading device. 3,628,754, Cl. 242-198.

Fujimoto, Ted Y., to North American Rockwell Corporation. Field effect transistor single phase clock signal generator. 3,629,618, Cl. 307-269.

Fujio, Ryota: *See—*
Onishi, Akira; Fujio, Ryota; Kojima, Minoru; and Kawamoto, Hiroshi,3,629,213.

Fujita, Saburo: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.

Fujita, Shigeo; Takatsu, Akihiko; and Shibuya, Kunitoyo, to Kaken Kagaku Kabushiku Kaisha. Process for purifying erythromycin. 3,629,233, Cl. 260-210.

Fukai, Masakazu: *See—*
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu,3,629,011.

Fukuba, Hiroshi. Carpet sweeper. 3,628,211, Cl. 15-42.

Fukuda, Junichi; Tashiro, Kijuro; Sennari, Mutsuo; and Nagashima, Kenjiro, to Mitsubishi Petrochemical Co., Ltd. Process for producing modified propylene polymer. 3,629,368, Cl. 260-878.

Fukuoka, Naohiko: *See—*
Onishi, Akiyoshi; and Fukuoka, Naohiko,3,629,194.

Fuller, Glenwood A., to General Electric Company. Universal printed circuit card edge connector. 3,629,807, Cl. 339-126.

Fullington, William H.; and Maisak, Melvin O., to Pet Incorporated. Mobile merchandiser cart. 3,628,807, Cl. 280-79.3

Fullmer, Dean W. Luminous display device. 3,629,655, Cl. 315-313.

Fullwood, John A.: *See—*
Goldberg, Alan August; and Fullwood, John A.,3,628,908.
Goldberg, Alan August; and Fullwood, John A.,3,628,909.

Furman, George R.: *See—*
Brown, William F.; Goetchius, Ronald J.; Furman, George R.; and Rouse, Alan D.,3,629,835.

Furst, Andor; and Muller, Marcel, to Hoffmann-La Roche Inc. 6-Chloro-20-substituted-pregnanes. 3,629,302, Cl. 260-397.4

Furuoya, Itsuo: *See—*
Morikawa, Kiyoshi; Echigoya, Etsuro; Shirasaki, Takayasu; and Furuoya, Itsuo,3,629,145.

Furusawa, Motoyoshi, to Fuji Shashin Koki Kabushiki Kaisha. Photographic camera. 3,628,439, Cl. 95-64.

Gaarder, Gilbert W.; and Hollingsworth, Elmont E., to Gray Manufacturing Company, Inc. Load carrying and positioning head. 3,628,772, Cl. 254-134.

GAF Corporation: *See—*
Ferrigan, Richard V., 3,628,617.
Schenck, Leslie M.; and Nunn, Leslie G., Jr., 3,629,377.
Yao, Shi-Kuang, 3,628,951.

Gagneux, Andre R.: *See—*
Doebel, Karl J.; and Gagneux, Andre R.,3,629,473.

Gahmberg, Gustaf; and Peltonen, Reijo Olavi, to Oy Wartsila AB. Discharge device for a vacuum sewerage system. 3,629,099, Cl. 210-104.

Gaiser, John A.: *See—*
Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad D.,3,628,465.

Gakken Co., Ltd.: *See—*
Arimura, Mashahiro, 3,628,286.

Galiano, Francis R.: *See—*
Smith, Wayne E.; Galiano, Francis R.; and Havens, Richard H.,3,629,164.

Galis, Alex J. Oscillating blade assembly for earth working machines. 3,628,265, Cl. 37-126.

Gallagher, Cornelius A., to Servo Corporation of America. Hot box detector alarm monitor. 3,629,572, Cl. 246-169.

Galli de Paratesi, Sergio: *See—*
Agazzi, Alberto; Broggi, Armando; Galli de Paratesi, Sergio; and Ghiurghi, Luciano,3,629,059.
Gannoe, Thomas Earl, to Sylvania Electric Products, Inc. Process for plating of stripes on longitudinal electrically conductive material. 3,629,077, Cl. 204-28.
Gante, Joachim; and Lust, Sigmund, to Merck Patent Gesellschaft mit beschrankter Haftung. Certain 2,6-dichloro-3,5-pyridinedicarbonitriles. 3,629,270, Cl. 260-294.8
Garcia, Ricardo. Pivoted jogging platform with adjustable spring- resistance. 3,628,791, Cl. 272-83.
Gardner, Floyd M.: *See—*
Dann, Bert H.; and Gardner, Floyd M.,3,629,491.
Gardner, James H., to Akzona Incorporated. Flame retardant polyesters containing polyamides and phosphine oxides. 3,629,365, Cl. 260-857.
Gartner, William J.; and Clark, Charles T., to Desoto, Inc. Structured insulating materials. 3,629,116, Cl. 252-62.
Gasc, Jean-Claude: *See—*
Costerousse, Germain; and Gasc, Jean-Claude,3,629,244.
Gaskell, Joseph; and Hamilton, Terence, to Dobson Gullick Limited, Inc. Mechanisms for converting angular motion to straight line motion. 3,628,387, Cl. 74-89.
Gass, Edward W.: *See—*
Copland, George V.; and Gass, Edward W.,3,629,859.
Gates Rubber Company, The: *See—*
Stuemky, Robert E., 3,628,352.
Gatzi, Karl: *See—*
Bader, Jorg; and Gatzi, Karl,3,629,252.
Gaunt, Marjorie Claire: *See—*
Gaunt, William E.; and Gaunt, Marjorie Claire,3,629,394.
Gaunt, William E.; and Gaunt, Marjorie Claire. Pleasant tasting chewable tablets and their production. 3,629,394, Cl. 424-38.
Gaydasch, Alexander, to Universal Oil Products Company. Middle distillate. 3,628,928, Cl. 44-66.
Geach, Charles John: *See—*
Groszek, Aleksander Jerzy; Witheridge, Rodney Ernest; and Geach, Charles John,3,629,107.
Gehlen, Hermann Walter. Amphibious vehicle. 3,628,490, Cl. 115-1.
Geigy Chemical Corporation: *See—*
Berrer, Dagmar; and Vogel, Christian, 3,629,256.
Berrer, Dagmar; and Vogel, Christian, 3,629,258.
Francis, John E., 3,629,251.
Model, Ernst; and Bindler, Jakob, 3,629,477.
Pesterfield, Enos Charles, Jr., 3,629,279.
Wasley, Jan W. F., 3,629,320.
Weiner, Murray, 3,629,432.
Geigy, J. R., A.G.: *See—*
Berrer, Dagmar; and Vogel, Christian, 3,629,257.
Heller, Hansjorg; Rody, Jean; and Keller, Ernst, 3,629,191.
Heller, Hansjorg; Rody, Jean; and Keller, Ernst, 3,629,192.
Geissler, Paul R.; and Magee, Ellington M., to Esso Research and Engineering Company. Method for producing nitrophosphate fertilizer. 3,628,940, Cl. 71-35.
Gelfand, Samuel: *See—*
Greenbaum, Sheldon B.; Gelfand, Samuel; and Weil, Edward D.,3,629,421.
Gemco, Inc.: *See—*
Golden, John R., 3,628,255.
General Aviation Electronics, Inc.: *See—*
Boelter, Donald A., 3,629,682.
General Binding Corporation (Canada) Limited: *See—*
Hoff, Charles Nicholas, 3,629,043.
General Cable Corporation: *See—*
Jachimowicz, Ludwik; and Masterson, Joseph B., 3,629,489.
General Dynamics Corporation: *See—*
Czernikowski, Roy S., 3,629,823.
General Electric Company: *See—*
Anderson, John M., 3,629,693.
Bender, Norman A., 3,628,240.
Conley, James W., 3,629,855.
Fapiano, Donald J.; and Norton, Allyn S., Jr., 3,628,358.
Feige, Edgar P., 3,629,613.
Fiedler, Howard C., 3,629,014.
Fuller, Glenwood A., 3,629,807.
George, Raymond L., 3,628,421.
Grimm, Bernard J., 3,628,845.
Grubb, Willard T.; and Cliche, Carl E., 3,629,008.
Holdstock, Norman G., 3,629,165.
Honda, Thomas S., 3,628,372.
Honda, Thomas S., 3,628,418.
Lake, William H., 3,629,647.
Lamoreaux, Harry F.; and Modic, Frank J., 3,629,358.
Nuckolls, Joe A., 3,629,683.
Perusek, Ronald J.; and Potter, Ralph M., 3,629,670.
Sayre, Edwin D.; and Stoffer, Lewis J., 3,628,890.
Sidenstick, James E.; Brown, Richard W.; Nichols, Herbert E.; and Burggraf, Frederick, 3,628,885.
Slonneger, John L., 3,629,769.
Smuland, Robert J.; Hope, Ned A.; and Sidenstick, James E., 3,628,880.
Spencer, William R., 3,628,329.
Stern, Hansjoerg, 3,628,552.
Szeremy, Norman, 3,629,789.
Wills, James Milner, 3,629,596.
General Mills, Inc.: *See—*
Jonaitis, Charles W.; and Elmquist, Lyle E., 3,629,319.
Stokes, Kenneth B., 3,629,013.
General Motors Corporation: *See—*
Dafler, Gene L.; and Fannin, Wayne V., 3,629,627.
Dafler, Gene L.; and Fannin, Wayne V., 3,629,634.
Daley, Frank R. L., Jr., 3,628,639.
Dega, Robert L.; and Mandley, Donald J., 3,628,376.
Ephraim, Max, Jr.; and Smith, Earl D., 3,629,676.
Gillund, Arden G., 3,629,816.
Gould, Robert R., Jr., 3,629,766.
Hanson, Richard J., 3,629,765.
Jones, Trevor O., 3,628,384.
Kauppila, James E., 3,629,669.
Kehoe, Ellsworth A.; and Stoltman, Donald D., 3,628,773.
Moulds, John W.; and Storey, Edwin C., 3,628,510.
Plumer, Roy D.; and Shrout, Harold, 3,628,277.
Rank, William E.; and Dafler, Gene L., 3,629,628.
Schroeder, Thaddeus, 3,629,620.
Seitz, William R.; and Whitney, Donald R., 3,628,399.
Shellhause, Ronald L., 3,628,331.
Snodgrass, John N., 3,628,641.
General Signal Corporation: *See—*
Fruehauf, Waldo G.; and Rue, Robert W., 3,628,424.
Herrmann, Arthur J., Jr., 3,628,881.
General Tire & Rubber Company: *See—*
Carpenter, Ray W., 3,629,081.
Genisco Technology Corporation: *See—*
Tikanen, William A.; and Hering, John H., 3,628,383.
Genma, Sanju: *See—*
Watanabe, Hikoitsu; and Genma, Sanju,3,629,485.
Genuit, Luther L., to Honeywell Information Systems Inc., mesne. Bistable multivibrator employing a pair of four- layer diodes. 3,629,621, Cl. 307-287.
George, Leslie C. Expansible fluid rotary engine. 3,628,899, Cl. 418-61.
George, Percy F., to Dow Chemical Company, The. Self-destructing metal structures. 3,629,091, Cl. 204-197.
George, Percy F., to Dow Chemical Company, The. Galvanically-destructing metal structures. 3,629,092, Cl. 204-197.
George, Raymond L., to General Electric Company. Bilateral hydromechanical servo system. 3,628,421, Cl. 91-358.
Georgia-Pacific Corporation: *See—*
Lindell, Courtney D.; and Locker, Hugh G., 3,628,734.
Gergel, William C.; Karn, Jack L.; and King, Laurence E., to Lubrizol Corporation, The. Basic magnesium salts, processes, and lubricants and fuels containing the same. 3,629,109, Cl. 252-33.
Gerlach, Le Roy E.: *See—*
Johnson, Gordon P.; and Gerlach, Le Roy E.,3,628,726.
Gerlicher, Robert A., to Copolymer Rubber & Chemical Corporation. Lubricating composition. 3,629,113, Cl. 252-49.7
Germain, Leo M., to Gulf Oil Canada Limited. Lamination of flexible webs with filamentary adhesive material. 3,629,027, Cl. 156-167.
Germann, Helmut: *See—*
Wiegelmann, Hans; and Germann, Helmut,3,628,389.
Gernert, Herbert: *See—*
Philippaerts, Herman Adelbert; Corluy, Hans Josephus; Gernert, Herbert; and Schulz, Guenther E. W.,3,628,960.
Gerwitz, Paul F.: *See—*
De Long, Robert J.; and Gerwitz, Paul F.,3,629,777.
Gesellschaft fur Kernforschung mbH.: *See—*
Becker, Erwin Willy, 3,628,342.
Eyrich, Werner, 3,629,588.
Getchell, Douglas E.: *See—*
Marroni, Michael A., Jr.; and Getchell, Douglas E.,3,628,189.
Getz, Frank C., Jr.: *See—*
Fraunfelder, James A.; Getz, Frank C., Jr.; Kauffman, Sidney L., Jr.; and Kurlans, William H.,3,629,837.
Gevaert-Agfa N.V.: *See—*
Brinckman, Eric Maria, 3,628,953.
De Keyser, Lodewijk Felix; Herbots, Joseph Antoine; and Thiers, Robrecht Julius, 3,629,054.
Philippaerts, Herman Adelbert; Corluy, Hans Josephus; Gernert, Herbert; and Schulz, Guenther E. W., 3,628,960.
Gewerkschaft Eisenhutte Westfalia: *See—*
Behr, Heinrich, 3,628,335.
Ghiurghi, Luciano: *See—*
Agazzi, Alberto; Broggi, Armando; Galli de Paratesi, Sergio; and Ghiurghi, Luciano,3,629,059.
Ghormley, Edward L., to North American Rockwell Corporation. Apparatus for measuring hydrogen absorption. 3,629,090, Cl. 204-195.
Ghosh, Ranajit; and Bishop, Nigel Douglas, to Imperial Chemical Industries Limited. Insecticidal and fungicidal compositions and methods of combating fungi and insets using isoxazolyl carbamates. 3,629,474, Cl. 424-272.
Gibson Associates Incorporated: *See—*
Gibson, Ralph Edminster, 3,628,488.
Gibson, Ralph Edminster, to Gibson Associates Incorporated. Diluted solution dispensing apparatus for boats. 3,628,488, Cl. 114-67.
Gibson, Robert G.; Greenberg, Allan; and Wilcox, John D., to International Business Machines Corporation. Print compare operation from main storage. 3,629,848, Cl. 340-172.5
Giese, Clifford C., Jr., to Ledex Inc. Load selector rotary wafer switch with printed circuit. 3,629,525, Cl. 200-11.

Gilbert, Paul T., to Beckman Instruments, Inc. Pressure measuring system. 3,628,373, Cl. 73-64.3

Gilbert, Ronald E.; and Clampitt, Bert H., to Gulf Research & Development Company. Thermally stabilized polyamide by coating particles with a cupric salt of a copolymer of ethylene with an unsaturated monocarboxylic acid and ester. 3,628,993, Cl. 117-100.

Gilbert, William B. Foamed plastic core door. 3,629,046, Cl. 161-43.

Gilbreath, Edward C.: *See—*
Gilbreath, William E.; and Gilbreath, Edward C.,3,628,628.

Gilbreath, William E.; and Gilbreath, Edward C., to Bleacher Sales Co. Scaffold platform. 3,628,628, Cl. 182-222.

Giles, Alan Frederick, to Lever Brothers Company. Apparatus for measuring the masses of a series of articles spaced apart by modules having a substantially constant radiation absorption characteristic. 3,629,586, Cl. 250-83.3

Gilkey, Russell; and Wicker, Thomas Hamilton, to Eastman Kodak Company. Treating polyesters with organic acids for improved stability. 3,629,202, Cl. 260-75.

Gill, John D.; and Wynne, James R. Planing boat with stepped hull. 3,628,485, Cl. 114-66.5

Gillogly, Gwendolyn Maybeth: *See—*
Hopkins, Milton S., 3,628,795.

Gillogly, Lorin Roy: *See—*
Hopkins, Milton S., 3,628,795.

Gillund, Arden G., to General Motors Corporation. Air cushion actuation and monitoring circuit. 3,629,816, Cl. 340-61.

Girling Limited: *See—*
Wilson, Alexander J., 3,628,554.

Gittos, Maurice Ward; James, John William; and Wiggins, Leslie Frederick, to Aspro-Nicholas Limited. Pharmaceutical compositions containing N-cyclopropyl -1-amino-1,2,3,4-tetrahydronaphthalenes and use of such N-cyclopropyl compounds as hypotensives. 3,629,463, Cl. 424-330.

Giuffre, Anthony A.: *See—*
Costarella, Nino F.; and Giuffre, Anthony A.,3,628,311.

Givaudan Corporation: *See—*
Manowitz, Milton; Walter, George R.; and Foris, Stephen A., 3,629,465.

Gjerde, Harlan T. High pressure spray device. 3,628,727, Cl. 239-124.

Glanzstoff AG: *See—*
Neuhaus, Clemens; Boehme, Klaus; and Gutermuth, Hermann, 3,628,503.

Glaser, Arthur B., to Bell Telephone Laboratories, Incorporated. N-path filter using digital filter as time invariant part. 3,629,509, Cl. 179-15.

Glass, Eugene D.; and Rhoades, Vaughan W., to Cities Service Oil Company. Method for recovery of coal energy. 3,628,929, Cl. 48-210.

Glassbergen, Jan Willem Cornelis, to Domaf N.V. Suckling device for calves or similar young cattle. 3,628,506, Cl. 119-71.

Glaverbel S.A.: *See—*
Duthoit, Jean, 3,628,934.
Leger, Lucien F.; and Lelong, Jose, 3,628,983.
Plumat, Emile; and Duperroy, Marcel, 3,628,936.

Gleixner, Franz; and Schreyer, Heinz, to Sick, Erwin. Optical double-beam measuring instrument. 3,629,589, Cl. 250-205.

Glendinning, William B.; and Mark, Albert, to United States of America, Army. Method of making an insulated gate field effect device. 3,629,016, Cl. 148-175.

Glenn, John F.: *See—*
Kroder, Ernest A.; and Glenn, John F.,3,628,248.

Glesne, Otto N. Tourniquet. 3,628,536, Cl. 128-327.

Glidden Roger C. Visual readout receiver. 3,629,508, Cl. 179-5.

Global Marine Inc.: *See—*
Michaelsen, Randolph C. H., 3,628,489.

Globe Tool and Engineering Company, The: *See—*
Biddison, John M.; and Donnaker, Clarence W., 3,628,229.

Gluntz, Glenn Harlan, to AMP Incorporated. Connector for point to point wiring system. 3,629,803, Cl. 339-107.

Godtfredsen, Wagn Ole, to Lovens Kemiske Fabrik Produktonsaktieselskab. Fusidosterol and the C-3 acylates thereof. 3,629,300, Cl. 260-397.2

Goetchius, Ronald J.: *See—*
Brown, William F.; Goetchius, Ronald J.; Furman, George R.; and Rouse, Alan D.,3,629,835.

Gold, Marvin H.; and Marcus, Henry J., to Aerojet-General Corporation. Process for controlling fungi. 3,629,440, Cl. 424-278.

Gold, William R.: *See—*
Leventhal, Ruth Lee; and Gold, William R.,3,628,197.

Goldberg, Alan August; and Fullwood, John A., to Precision Processes (Textiles) Limited. Shrinkproofing wool with oxidizing agents using foulard liquid application technique. 3,628,908, Cl. 8-127.6

Goldberg, Alan August; and Fullwood, John A., to Precision Processes (Textiles) Limited. Shrinkproofing wool with oxidizing agents using foulard liquid application technique. 3,628,909, Cl. 8-127.6

Golden, John R., to Gemco, Inc. Apparatus for teaching or testing an applicant. 3,628,255, Cl. 35-9.

Goodman, Harris: *See—*
Banker, Gilbert S.; and Goodman, Harris,3,629,392.

Goodrich, B. F., Company, The: *See—*
Eden, Jamal S., 3,629,147.

Goodrich Tire & Rubber Company, The: *See—*
O'Neil, Kevin B.; Fraser, Cameron R.; and Helms, Paul E., Jr., 3,628,587.

Goodrich-Gulf Chemicals, Inc.: *See—*
Harpell, Gary A., 3,629,345.

Goodyear Tire & Rubber Company, The: *See—*
Curtiss, Walter W., 3,628,586.
Pace, Henry A., 3,628,585.

Gordon, Donald W. Gymnast trainer cushions. 3,628,790, Cl. 272-64.

Gordon, Harry W.; and Schaffner, Carl P., to Schmid, Julius, Inc. Methods of treating acne. 3,629,403, Cl. 424-117.

Gordon, Richard J., to Parker Industries, Inc. Refuse container. 3,628,685, Cl. 220-29.

Gorin, Everett; Struck, Robert T.; and Kulik, Metro D., 1/2 to Consolidation Coal Company, mesne, and 1/2 to United States of America, Interior. Regeneratqon of spent zinc halide catalyst using preliminary high pressure hydrogen solvent extraction. 3,629,159, Cl. 252-414.

Gorjat, Jean, to AMP Incorporated, mesne. Pre-insulated electrical terminal. 3,629,810, Cl. 339-217.

Goubau, Georg J. E., to United States of America, Army. Multi-beam optical wave transmission. 3,628,861, Cl. 350-96.

Gould, Robert R., Jr., to General Motors Corporation. Fusible link circuit protective device. 3,629,766, Cl. 337-239.

Gouye, Emmanuel V.: *See—*
Reinfeld, Kurt; and Gouye, Emmanuel V.,3,628,594.

Gower, Bob G.: *See—*
Gower, Howard D.; Gower, Bob G.; and Young, David W.,3,629,112.

Gower, Howard D.; Gower, Bob G.; and Young, David W., to Atlantic Richfield Company. Aqueous lubricating compositions containing salts of styrene-maleic anhydride copolymers and an inorganic boron compound. 3,629,112, Cl. 252-34.7

Goyer, Ronald Bruce, to RCA Corporation. Current source with positive feedback current repeater. 3,629,692, Cl. 323-4.

Graboyes, Herman, to Numerical Control Program Service, Inc. Method and apparatus for engraving characters. 3,628,417, Cl. 90-13.

Grace, W. R., & Co.: *See—*
Cooper, Joseph; and Corbett, William James, 3,629,004.
Jefferson, Donald E.; and Marans, Nelson S., 3,629,178.
Kawam, Antoine; and Ernest, Michael V., 3,629,184.
Owen, Dave L., 3,628,576.
Pryor, James N., 3,629,153.
Roberts, John T., 3,628,302.

Graef, Kurt, to Ford Motor Company. Level adjustment for motor vehicles. 3,628,810, Cl. 280-124.

Graffman, Holger. Hydraulic pulse generator. 3,628,896, Cl. 417-487.

Graham, Charles Eckner; Lumley, Robert Miller; and Oberholzer, David James, to Western Electric Company, Incorporated. Laser substrate parting. 3,629,545, Cl. 219-121.

Graham, Seymour C. Method of forming and filling containers at high rates of speed. 3,628,303, Cl. 53-30.

Graham, Thomas G.: *See—*
Seck, John C.; Rogers, Howard D.; Graham, Thomas G.; and Hannen, James H., Jr.,3,628,478.

Graulier, Maxime, to Produits Chimiques Pechiney-Saint-Gobain. Preparation of active alumina agglomerates of high mechanical strength. 3,628,914, Cl. 23-143.

Gray Manufacturing Company, Inc.: *See—*
Gaarder, Gilbert W.; and Hollingsworth, Elmont E., 3,628,772.

Graybill, Wilbur H. Harvesting machine. 3,628,609, Cl. 171-14.

Grayson, Martin, to American Cyanamid Company. Compositions for the deformation of keratin. 3,628,910, Cl. 8-127.51

Greefkes, Johannes Anton; Riemens, Karl; Korevaar, Geerlof Jan; and Van Dijk, Leonardus Petrus Josef, to U.S. Philips Corporation. Device including a comparison stage in the form of a bistable trigger. 3,629,619, Cl. 307-264.

Green, Donald W., to Dow Jones & Company, Inc., mesne. Valve assembly. 3,628,568, Cl. 137-610.

Greenbaum, Sheldon B.; Gelfand, Samuel; and Weil, Edward D., to Hooker Chemical Corporation. Halogenated bicycloheptenyl compounds as insecticides. 3,629,421, Cl. 424-263.

Greenberg, Allan: *See—*
Gibson, Robert G.; Greenberg, Allan; and Wilcox, John D.,3,629,848.

Greening, Nathan R.; Copeland, Llewellyn E.; and Verbeck, George J., to Portland Cement Association. Modified portland cement and process. 3,628,973, Cl. 106-89.

Greenwood Mills: *See—*
Cassaday, Lewis E., 3,629,559.

Gregory, Roy. Pain removing composition and process for preparing same. 3,629,409, Cl. 424-195.

Grethe, Guenter; Lee, Hsi Lin; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. 7 Halo-4-isoquinolones. 3,629,265, Cl. 260-287.

Grether, Adolf: *See—*
Schuster, Wilhelm; and Grether, Adolf,3,628,646.

Grewe, Ferdinand: *See—*
Malz, Hugo; Grewe, Ferdinand; Dorken, August; and Kaspers, Helmut,3,629,458.

Grib, Boris F., to Philamon Incorporated. Compound tine for tuning fork or the like. 3,628,781, Cl. 267-154.

Gribova, Irina Alexandrovna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna;

Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.

Griffith, Jeffrey D., to Dow Chemical Company, The. Soil fumigation method. 3,629,422, Cl. 424-263.

Grimm, Bernard J., to General Electric Company. Refrigerator cabinet with self-closing door. 3,628,845, Cl. 312-319.

Grimm, Marian Andreas, to International Business Machines Corporation. Method and apparatus for magneto-optical reading of superimposed magnetic recordings. 3,629,517, Cl. 179-100.2

Gripekoven, Henry A.: *See—*
Wise, Lester V.; and Gripekoven, Henry A.,3,628,266.

Gris, Conrad D.: *See—*
Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad D.,3,628,465.

Grise, Frederick G. J., to Novelty Tool Company, Inc. Hog ring gun. 3,628,230, Cl. 29-212.

Grissom, John T.: *See—*
Koehler, Dale R.; and Grissom, John T.,3,629,582.

Grivas, John C., to Sherwin-Williams Company, The. Fungicidal compositions containing 2,2'-bis (allyl-carbamylphenyl)-disulfide. 3,629,457, Cl. 424-324.

Groasdale, William Herbert; and Johnson, Donald Owen, to American Can Company. Container capping apparatus. 3,628,307, Cl. 53-299.

Grobowski, Ben T., to A-T-O Inc. Reel type lawn mower with height of cut adjustment. 3,628,318, Cl. 56-249.

Grobowski, Ben T., to A-T-O Inc. Adjustable steering assembly. 3,628,396, Cl. 74-493.

Gross, Helmut, to Pfaff, G. M., AG. Automatic looper thread control mechanism for chainstitch sewing machines. 3,628,481, Cl. 112-199.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Internal combustion engine valve gear lubrication. 3,628,513, Cl. 123-90.34

Groszek, Aleksander Jerzy; Witheridge, Rodney Ernest; and Geach, Charles John, to British Petroleum Company Limited, The. Metal-graphite compositions. 3,629,107, Cl. 252-12.

Grubb, Willard T.; and Cliche, Carl E., to General Electric Company. Composite electrode and electrochemical cell with at least one gas diffusion electrode. 3,629,008, Cl. 136-86.

Gruenfeld, Norbert; and Wasley, Jan W. F., to Ciba-Geigy Corporation. O-(substituted benzamido) phenylacetic acids as anti-inflammatory agents. 3,629,450, Cl. 424-319.

Grunewalder, Werner, to Henkel & Cie, G.m.b.H. Textile chemical cleaning processes. 3,628,911, Cl. 8-142.

Gruschkau, Horst: *See—*
Mauler, Rudolf; and Gruschkau, Horst,3,629,399.

Gschwend, Heinz Werner; and Finch, Neville, to Ciba Corporation. Antidepressant compositions of cycloalkano[c] pyrazole ethers. 3,629,433, Cl. 424-273.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Flamini, Joseph D., Jr., 3,629,514.

Guiochon, Paul: *See—*
Desvignes, Francois; Guiochon, Paul; and Pompei, Jean,3,629,585.

Gulf & Western Industries: *See—*
Clark, Larry K.; Bartlett, Peter G.; and Hill, Frank W., 3,629,802.

Gulf & Western Industries, Inc.: *See—*
Kindred, William B., 3,629,775.

Gulf & Western Systems Company: *See—*
Fraunfelder, James A.; Getz, Frank C., Jr.; Kauffman, Sidney L., Jr.; and Kurlans, William H., 3,629,837.

Gulf Oil Canada Limited: *See—*
Germain, Leo M., 3,629,027.

Gulf Research & Development Company: *See—*
Doyle, William C., Jr., 3,628,945.
Gilbert, Ronald E.; and Clampitt, Bert H., 3,628,993.
Pellegrini, John P., Jr.; and Strange, Harold O., 3,629,476.
Smith, Wayne E.; Galiano, Francis R.; and Havens, Richard H., 3,629,164.

Gullasch, Jurgen: *See—*
Weber, Ulrich; and Gullasch, Jurgen,3,629,577.

Gullfeldt, Bengt Hjalmar. Herbicidal composition and method of combating undersirable plant growth. 3,628,943, Cl. 71-93.

Gumlich, Willi, to Schlang & Reichart Maschinenfabrik. Drive apparatus for cables. 3,628,391, Cl. 74-230.24

Gundel, Maria-Luise Elsa: *See—*
Fries, Walter; Puchta, Rolf; Nagel, Horstmar; and Gundel, Wolfgang,3,629,126.

Gundel, Wolfgang: *See—*
Fries, Walter; Puchta, Rolf; Nagel, Horstmar; and Gundel, Wolfgang,3,629,126.

Gunji, Hiroshi: *See—*
Tako, Kazuteru; and Gunji, Hiroshi,3,628,740.

Gurwicz, David, to Sevcon Engineering Limited. Current limiting means for D. C. pulse controlled circuits. 3,629,615, Cl. 307-252.

Gurwicz, David, to Sevcon Engineering Limited. Circuits for controlled battery chargers. 3,629,681, Cl. 320-21.

Gutbier, Heinrich, to Siemens Aktiengesellschaft. Method and apparatus for eliminating waste heat and reaction water together from fuel cells. 3,629,075, Cl. 203-1.

Gutermuth, Hermann: *See—*
Neuhaus, Clemens; Boehme, Klaus; and Gutermuth, Hermann,3,628,503.

Gutshall, Charles E., to Illinois Tool Works Inc. Spring washer. 3,628,584, Cl. 151-38.

Guyeska, John C.: *See—*
Christen, Roland W.; Guyeska, John C.; and Horstman, Gerald H.,3,629,684.

H-C Industries, Inc.: *See—*
Carrell, Lelah A.; and Morris, Richard W., 3,628,271.

Haagensen, Duane Buford, to Matsushita Electric Industrial Co., Ltd. Microwave oven door seal having dual cavities fed by a bi-planar transmission line. 3,629,537, Cl. 219-10.55

Habas, Stanley. Bead forming device for sewing machines. 3,628,477, Cl. 112-151.

Habermeir, Juergen: *See—*
Batzer, Hans; Habermeir, Juergen; and Porret, Daniel,3,629,263.

Hack, Helmuth: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth,3,629,275.

Haefner, John A., to Eastman Kodak Company. Bipyridinium compound/nitro-substituted N- heterocyclic compound desensitized silver halide emulsion. 3,628,958, Cl. 96-101.

Hagedorn, Leo, to Maschinenfabrik Carl Zanas Aktiengesellschaft. Indicating devices. 3,628,495, Cl. 116-115.5

Hagel, Karl Otto: *See—*
Benedikter, Kurt; Hagel, Karl Otto; and Kiepert, Klaus,3,629,212.

Hagemeyer, Hugh J., Jr.: *See—*
Hull, David C.; Hagemeyer, Hugh J., Jr.; and Etter, Raymond L., Jr.,3,629,186.

Haggard, Nils Olof; Murne, Bertil Sven Oskar; and Jakobsen, Kjell Mosvoll, to AB Platmanufaktur. Closure member for a container. 3,628,688, Cl. 220-47.

Hagihara, Takeaki: *See—*
Akamatsu, Kiyoshi; Hagihara, Takeaki; and Ishido, Teruhisa,3,628,963.

Hahn, George A.; and La Rochelle, John H., to Shell Oil Company. Heavy metal acid salt recovery using anion exchange resin. 3,629,144, Cl. 252-412.

Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Fluorine and silicon containing polycondensates. 3,629,196, Cl. 260-46.5

Hahn, Laurence W., to Connrex Corporation, The. Battery top sealer. 3,629,010, Cl. 136-176.

Haist, Grant M.; and Pupo, David A., to Eastman Kodak Company. Inhibition of silvering in photographic solutions. 3,628,955, Cl. 96-61.

Halasz, Alexander: *See—*
Brody, Frederick; Halasz, Alexander; and Bil, Milos S.,3,629,330.

Halder, Anton; and Buhl, Erwin, to Hengstler, J., K.G. Pulse-conducting circuit arranged to detect troubles in its operation. 3,629,604, Cl. 307-106.

Halfhill, Martin O., to Information Storage Systems, Inc. Linear motor power failure detection circuit and fail safe control. 3,629,679, Cl. 318-563.

Halliburton Company: *See—*
Copland, George V.; and Gass, Edward W., 3,629,859.

Hallwood, Harry, to Midweso-Enterprise, Inc. Inflatable temporary field joint. 3,628,814, Cl. 285-45.

Halone, William. Fishing lure retriever and method for using same. 3,628,279, Cl. 43-17.2

Hals, Thorbjorn, to A/S Kongsberg Vapenfabrik. Elastic, sealing connecion. 3,628,883, Cl. 415-204.

Halstead, William M. Method and tool for assembling leads into circuit board apertures. 3,628,244, Cl. 29-626.

Hamada, Minoru: *See—*
Satake, Kunio; Sone, Tomiho; and Hamada, Minoru,3,629,038.

Hamill, Ralph: *See—*
Schlemmer, Alfred H.; and Pearson, Melvin A., 3,628,258.

Hamill, Robert L.; and Hoehn, Marvin M., to Lilly, Eli, and Company. Antibiotics A 4993A and A 4993B and process for producing the antibiotics. 3,629,405, Cl. 424-117.

Hamilton Company: *See—*
Vannus, Tom H., 3,628,382.

Hamilton, Terence: *See—*
Gaskell, Joseph; and Hamilton, Terence,3,628,387.

Hammer, William C., to Sharvania Oil & Grease Corporation. Lubricant disperser. 3,628,630, Cl. 184-50.

Hanak, Joseph John, to RCA Corporation. Magnetic heads with poles joined by molecular transport bonding. 3,629,519, Cl. 179-100.2

Hand, Clare R.: *See—*
Pews, Richard Garth; Hand, Clare R.; and Roberts, Carleton W.,3,629,315.

Hanes, Arnold Loyd. Screw and light combination for instrument lighting. 3,629,568, Cl. 240-2.

Hanes, James W. E.: *See—*
Larralde, Edward; Weber, Ronald A.; Hanes, James W. E.; and Childers, Thomas W.,3,628,812.

Hanna, Ralph T.: *See—*
Becker, Ronald F.; Hanna, Ralph T.; and Waterhouse, Ernest L.,3,628,509.

Hannen, James H., Jr.: *See—*
Seck, John C.; Rogers, Howard D.; Graham, Thomas G.; and Hannen, James H., Jr.,3,628,478.

Hannoosh, Mitchell. Automobile camper. 3,628,825, Cl. 296-23.

Hanson, Richard J., to General Motors Corporation. Circuit breaker. 3,629,765, Cl. 337-103.

Hara, Shoji, to Toyo Roshi Company, Limited. Continuous flow, preparative thin-layer chromatograph. 3,629,098, Cl. 210-31.

Harbert, Donald Duane, to RCA Corporation. Operation of field-effect transistor circuit having substantial distributed capacitance. 3,629,612, Cl. 307-238.

Harcz, Edward F. Vacuum belt conveyors. 3,628,654, Cl. 198-179.

Hardebeck, Klaus: *See—*
Schaumann, Wolfgang; Dietmann, Karl; and Hardebeck, Klaus,3,629,420.

Hardenbrook, Harry J.: *See—*
Berndt, Wilbur C.; and Hardenbrook, Harry J.,3,628,537.

Hardie, Waldo R.; and Aaron, Joseph E., to Cutter Laboratories, Inc. 1,3-Dioxolan-4-yl-alkyl amines. 3,629,287, Cl. 260-340.9

Hardy, Edgar E.: *See—*
Jackson, Robert C.; Mueller, James C.; and Hardy, Edgar E.,3,628,453.

Hare, Charles A., to Sperry Rand Corporation. Vector generator apparatus. 3,629,841, Cl. 340-172.5

Hare, George H.: *See—*
Clark, William R.; Hare, George H.; and Osborn, Peter E.,3,629,850.

Harmon, Albert D., to Maremont Corporation. Method and apparatus for traveler threading. 3,628,320, Cl. 57-34.

Harnden, Michel Raymond, to Abbott Laboratories. 2-Amino-5-spiro-substituted-oxazo compounds. 3,629,276, Cl. 260-307.

Haroche, Serge: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude,3,629,697.

Harpell, Gary A., to Goodrich-Gulf Chemicals, Inc. Reaction products of lithium alkyls and certain nitro compounds. 3,629,345, Cl. 260-645.

Harrell, Joseph I., to Hercules Incorporated. Propellant charge for telescope caseless ammunition having a deterrent coated aft-end. 3,628,456, Cl. 102-38.

Harrington, Joseph Kenneth; and Trepka, Robert D., to Minnesota Mining and Manufacturing Company. N-(aralkyl) fluoroalkanesulfonamides. 3,629,332, Cl. 260-556.

Harris, Josephine: *See—*
Bryant, Clifford F., 3,628,695.

Harris, Leonard. Balanced breathing pressure suit with helmet and hand operated contol valve. 3,628,531, Cl. 128-142.5

Harris, Michael R., to Baldwin, D. H., Company. Phythmic accompaniment system employing randomness in rhythm generation. 3,629,480, Cl. 84-1.03

Harris, Walter William, to Johns-Manville Corporation. Method and apparatus for preparing molten material into glass fibers. 3,628,930, Cl. 65-2.

Hart, Ronald L.: *See—*
Bayless, Robert G.; Emrick, Donald D.; and Hart, Ronald L.,3,629,140.

Hartlein, Robert C.; and Olson, Carl R., to Dow Corning Corporation. Non-corrosive siloxane vulcanizable at room temperature. 3,629,228, Cl. 260-185.

Hartley, Jack B., to Collins Radio Company. Electrical interconnect system. 3,629,788, Cl. 339-18.

Hartmann, Klaus, to Maschinenfabrik Augsburg-Nurnberg AG. Vertical mold assembly. 3,628,766, Cl. 249-129.

Harvey, Don E.: *See—*
Rohrberg, Roderick G.; and Harvey, Don E.,3,628,236.

Harvey, Donald M., to Eastman Kodak Company. Motion picture projector with apparatus for editing and splicing motion picture film. 3,628,855, Cl. 352-130.

Harvey, Donald M., to Eastman Kodak Company. Fully automatic focusing projector. 3,628,857, Cl. 353-101.

Harvey, William G.: *See—*
Mikus, Leonard E.; and Harvey, William G.,3,629,831.

Hashimoto, Osamu; and Kawai, Nobuyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Fiber reinforced plastic ski and method of making the same. 3,628,802, Cl. 280-11.13

Hasuo, Masayoshi: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Matsuura, Junichi; Hasuo, Masayoshi; and Kojima, Kazuhisa,3,629,216.

Hatten, Jimmy L.; and Nauck, Kurt Rudolph, Jr., to El Paso Products Company. Process for the manufacture of adiponitrile. 3,629,316, Cl. 260-465.2

Hattwig, Peter, to Teldix GmbH. Optical warning system for vehicle brakes. 3,629,815, Cl. 340-52.

Hauck, Erwin A.; and Werner, John R., to Burroughs Corporation. Modular multiprocessor system with recirculating priority. 3,629,854, Cl. 340-172.5

Haugh, Charles E.: *See—*
Maier, Alfred E.; Ricci, Louis N.; and Haugh, Charles E.,3,629,744.

Haugh, Eugene Frederick, to Du Pont de Nemours, E. I., and Company. Process for preparing direct positive images by photosolubilization. 3,628,956, Cl. 96-64.

Haunschild, Willard M., to Chevron Research Company. Separation of linear olefins from tertiary olefins. 3,629,478, Cl. 260-677.

Hausermann, Heinrich; and Troxler, Eduard, to Ciba-Geigy Corporation. Protection against the growth of penicillium. 3,629,417, Cl. 424-249.

Havens, Richard H.: *See—*
Smith, Wayne E.; Galiano, Francis R.; and Havens, Richard H.,3,629,164.

Havera, Herbert John, to Miles Laboratories, Inc. (Phenyl piperidino alkyl)3,4 dihydrocarbostyrils. 3,629,266, Cl. 260-288.

Haverberg Auto Laundry Equipment Co., Inc.: *See—*
Van Brakel, Russel A., 3,628,212.

Hayakawa, Ken; and Tamada, Mitsuaki, to Tokico Ltd. Liquid supplying apparatus. 3,629,858, Cl. 340-172.5

Hayamizu, Yoshisada, to Olympus Optical Company Limited. Device for measuring amount of displacements with aid of gratings. 3,628,870, Cl. 356-170.

Hayes, Charles M.: *See—*
McLarty, Jack Lowrie; Hayes, Charles M.; and Latos, Edwin J.,3,629,028.

Hazard, Richard: *See—*
Cairns, Hugh; Hazard, Richard; and King, John,3,629,290.

Hazeltine Corporation: *See—*
Henken, Heniz F., 3,629,702.
Morgenfruh, Rudolph A., 3,629,493.

Headrick, Edward E. Impeller wheel for amphibious vehicle. 3,628,493, Cl. 115-19.

Hearn, Daniel P., to Atlantic Richfield Company. Method and apparatus providing a difference in a signal indicative of radiation absorption in a magnetometer. 3,629,694, Cl. 324-0.5

Heer, Alfred; Schneider, Wolfgang; and Dreher, Bernd, to Ciba Limited. Adduct curing agents from polyepoxides and cycloaliphatic diamines. 3,629,181, Cl. 260-31.8

Heffernan, Bart T.: *See—*
Osrowsky, Efrem; Heffernan, Bart T.; and Best, Aaron R.,3,628,535.

Hegeland, Walter, to Sprague Electric Company. Cylindrically molded metal film resistor. 3,629,781, Cl. 338-276.

Heider, Joachim: *See—*
Eberlein, Wolfgang; Heider, Joachim; Machleidt, Hans; and Engelhardt, Gunther,3,629,234.

Heiffer, Melvin H.; and Jacobus, David P., to United States of America, Army. Alpha-adrenergic blocking agents. 3,629,410, Cl. 424-211.

Heilig, Morton L. Experience theater. 3,628,829, Cl. 297-217.

Heimbach, Paul: *See—*
Wilke, Gunther; and Heimbach, Paul,3,629,347.

Heinz, Gerald O., to Streator Dependable Mfg., Co. Captive pallet for load stacking racks. 3,628,672, Cl. 211-153.

Helge, Anders; and Johansson, Torkel, to Allmanna Svenska Elektriska Aktiebolaget. Static impedance relay. 3,629,658, Cl. 317-36.

Hell, Rudolf, Kommanditgesellschaft Kiel: *See—*
Keller, Hans, 3,629,490.

Heller, Hansjorg; Rody, Jean; and Keller, Ernst, to Geigy, J. R., A.G. UV-absorbing hydroxyphenylbenzotriazoles. 3,629,191, Cl. 260-45.8

Heller, Hansjorg; Rody, Jean; and Keller, Ernst, to Geigy, J. R., A.G. Polymers stabilized with substituted hydroxy- phenyl benzotriazoles. 3,629,192, Cl. 260-45.8

Heller, Oscar; and Chmiel, John A., to Bulova Watch Company, Inc. Differential amplifying system. 3,629,719, Cl. 330-69.

Helms, Paul E., Jr.: *See—*
O'Neil, Kevin B.; Fraser, Cameron R.; and Helms, Paul E., Jr.,3,628,587.

Helton, William J., to Foster Bros. Manufacturing Company. Hospital-type bed. 3,628,199, Cl. 5-63.

Helton, William J., to Foster Bros. Manufacturing Company. Hospital-type bed. 3,628,200, Cl. 5-64.

Hemmings, Robert: *See—*
Cotton, Herbert John Thomas; and Hemmings, Robert,3,629,630.
Cotton, Herbert John Thomas; and Hemmings, Robert,3,629,631.

Henderson, George A.; and Pittman, Gary E., to Texas Instruments, Incorporated. Process for the fabrication of light-emitting semiconductor diodes. 3,629,018, Cl. 148-187.

Hendricks, Udo-Winfried: *See—*
Kirschnek, Helmut; Hildebrand, Dietrich; Hendricks, Udo-Winfried; Meier, Gerhard; and Quaedvlieg, Mathieu,3,628,905.

Hendrickson, Richard F.; and King, Roderick V., to Sterling Seal Company. Directional closure for a container. 3,628,699, Cl. 222-182.

Hengstler, J., K.G.: *See—*
Halder, Anton; and Buhl, Erwin, 3,629,604.

Henkel & Cie GmbH: *See—*
Fries, Walter; Puchta, Rolf; Nagel, Horstmar; and Gundel, Wolfgang, 3,629,126.
Grunewalder, Werner, 3,628,911.
Jakobi, Gunter, 3,629,122.
Krause, Horst-Jurgen; and Dohr, Manfred, 3,629,241.
Nosler, Heinz Gunter; Bellinger, Horst; and Wessendorf, Richard, 3,629,464.

Henken, Heniz F., to Hazeltine Corporation. Automatic tester for a plurality of discrete electrical components supplied in a repetitive predetermined sequence. 3,629,702, Cl. 324-73.

Henning, John, to McGraw-Edison Company. Adjustable air direction means for a conditioner. 3,628,443, Cl. 98-121.

Henoco, Emile: *See—*
Relyveld, Edgar; and Henoco, Emile,3,629,400.

Henry, Herbert J., to Unistrut Corporation. Breakaway sign support. 3,628,296, Cl. 52-98.

Herbert Products International Corporation: *See—*
Herbert, William C., Jr., 3,629,555.

Herbert, William C., Jr., to Herbert Products International Corporation, mesne. Heating apparatus for a printing press. 3,629,555, Cl. 219-525.

Herberts, Kurt, Dr., & Co. vorm Otto Louis Herberts: *See*—
Dobbelstein, Arnold; Hille, Hans-Dieter; and Holfort, Horst, 3,629,201.
Herbots, Joseph Antoine: *See*—
De Keyser, Lodewijk Felix; Herbots, Joseph Antoine; and Thiers, Robrecht Julius,3,629,054.
Hercules Incorporated: *See*—
Davison, Robert W., 3,629,047.
Davison, Robert W., 3,629,048.
Harrell, Joseph I., 3,628,456.
Moore, Alvin G.; and Schuemann, Wilfred C., 3,628,371.
Hering, John H.: *See*—
Tikanen, William A.; and Hering, John H.,3,628,383.
Herr, Ross R.: *See*—
Argonudelis, Alexander D.; De Boer, Clarence; Eble, Thomas E.; and Herr, Ross R.,3,629,406.
Herrmann, Arthur J., Jr., to General Signal Corporation. Low noise impeller for centrifugal pump. 3,628,881, Cl. 415-119.
Hersh, Herbert N., to United States of America, Army, mesne. Optical shutter composition and method of producing same. 3,629,100, Cl. 252-300.
Herter's, Inc.:*See*—
Hofmeister, Russell N., 3,628,519.
Hessen, Petter, to Allmanna Svenska Elektriska Aktiebolaget. Arrangement in converter stations for ultra high voltages. 3,629,687, Cl. 321-27.
Hessler, John, Jr., to Motorola, Inc. High frequency doubly balanced wide waveband ring connected diode modulator. 3,629,729, Cl. 332-16.
Hetterscheid, Wilhelmus Theodorus Hendrikus; and Van Schaik, Gerrit Pieter Johannes, to U.S. Philips Corporation. Voltage supply apparatus for applying a direct current to a periodically varying load. 3,629,686, Cl. 321-18.
Hettich, Franz, Messrs., KG: *See*—
Schaber, Christian; and Schmid, Gunter, 3,628,217.
Hevonkoski, Frank A.: *See*—
Chope, Ronald D.; and Hevonkoski, Frank A.,3,628,400.
Hewlett-Packard Company: *See*—
Chisholm, Hamilton C.; and Shannon, Raymond M., 3,629,845.
Hexcel Corporation: *See*—
Cuthbert, Phillip W.; and Neail, William R., 3,629,487.
Hidaka, Mikio: *See*—
Yamada, Keisho; Nagai, Shigeki; Odan, Kyoji; and Hidaka, Mikio,3,629,317.
Hider, Shibley A.; Kitaj, Walter; and Martin, Robert E., to Owens-Illinois, Inc. Organopolysiloxane impregnated fibrous sheet and method of producing same. 3,628,985, Cl. 117-46.
Hieke, Erhard, to Norddeutsche Affinerie, and Spiess, C. F., & Sohn Chemische Fabrik. Packing container for scatterable particulate material. 3,628,707, Cl. 222-567.
Hildebrand, Dietrich: *See*—
Kirschnek, Helmut; Hildebrand, Dietrich; Hendricks, Udo-Winfried; Meier, Gerhard; and Quaedvlieg, Mathieu,3,628,905.
Hill, Donald E. Method of manufacturing wound stators. 3,628,238, Cl. 29-596.
Hill, Donald E. Apparatus for manufacturing wound stators. 3,628,575, Cl. 140-92.1
Hill, Frank W.: *See*—
Clark, Larry K.; Bartlett, Peter G.; and Hill, Frank W.,3,629,802.
Hill, Franklin J., to Parker Pen Company, The. Corrosion resistant binder for tungsten carbide materials and titanium carbide materials. 3,628,921, Cl. 29-182.7
Hill, William Frank, to Lucas, Joseph, (Industries) Limited. Alternators utilizing two phase 'T' connected windings to get three phase output. 3,629,636, Cl. 310-184.
Hill, William Frank, to Lucas, Joseph, (Industries) Limited. Warning systems for road vehicles. 3,629,817, Cl. 340-62.
Hille, Hans-Dieter: *See*—
Dobbelstein, Arnold; Hille, Hans-Dieter; and Holfort, Horst,3,629,201.
Hille, Martin; and Ulmschneider, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water-base clayey drilling fuilds. 3,629,101, Cl. 252-8.5
Hillman, Ernest C. Tissue holder and attachment therefor. 3,628,691, Cl. 221-45.
Hills, Stanley, to ESB Incorporated. Method to provide positive plate for lead acid storage battery cells. 3,629,006, Cl. 136-27.
Hills-McCanna Company: *See*—
Rost, Thomas E., 3,628,770.
Hiltpold, John P.: *See*—
Baynes, William R.; Hiltpold, John P.; and Staats, William A.,3,629,680.
Himmelmann, Wolfgang: *See*—
Riebel, Aexander; Himmelmann, Wolfgang; Meyer, Karl-Otto; and Van Veelen, George Frans,3,628,961.
Himmelstrup, Anders B. Optical color printing analysis device and method. 3,628,871, Cl. 356-189.
Hingorany, Ashok R., to Texas Instruments, Incorporated. Semiconductor device package having improved compatibility properties. 3,629,668, Cl. 317-234.
Hinterholzl, Ernst, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Device for the axial adjustment of rolls, particularly grooved rolls. 3,628,365, Cl. 72-237.
Hinton, Brian J.; and Kite, Kenneth F., to Triplex Safety Glass Co., Ltd. Method of making laminated panels incorporating heating wires. 3,629,040, Cl. 156-275.
Hirama, Teruo; and Yamamoto, Yukio, to Nissan Motor Company, Limited. Anti-theft device for a motor vehicle. 3,629,818, Cl. 340-64.
Hirano, Takayoshi: *See*—
Kawamura, Shigeo; Hirano, Takayoshi; Takamura, Shuichi; and Okazaki, Masahiko,3,629,306.
Hirooka, Masaaki: *See*—
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi,3,629,215.
Hirsch, Donald; and Meadors, Howard Clarence, Jr., to Bell Telephone Laboratories, Incorporated. System for generating initial settings for an automatic transversal equalizer. 3,629,736, Cl. 333-18.
Hirsty, Sylvain M.: *See*—
Apotheker, David; and Hirsty, Sylvain M.,3,629,210.
Hirzel, Hans, to Novitas Fabrik Elektrischer Apparate AG Zurich, Firma. Electrical timer mechanism with improved cam operated actuating means. 3,629,528, Cl. 200-38.
Hisayasu, Yokohama: *See*—
Kimura, Yoshiaki; Sano, Yoshiharu; Kumazawa, Ryoji; and Hisayasu, Yokohama,3,629,024.
Hitachi, Ltd.: *See*—
Kawabe, Ushio; Kudo, Mitsuhiro; Ishibashi, Masato; and Doi, Toshio, 3,629,753.
Naitou, Hideo, 3,629,579.
Toyoda, Kozo; and Akatu, Katutosi, 3,628,241.
Yamazaki, Eiichi; Maruyama, Kooichi; and Ogura, Iwao, 3,628,850.
Hitachi Shipbuilding and Engineering Co., Ltd.: *See*—
Tsurumi, Nariyoshi, 3,628,300.
Hjortkjaer, Jes: *See*—
Petersen, Povl V.; Lassen, Niels; and Hjortkjaer, Jes,3,629,444.
Hobbs, Charles C., Jr.: *See*—
Stautzenberger, Adin L.; and Hobbs, Charles C., Jr.,3,629,341.
Hodges, Ralph R., to Empire Stove Company. Heater for enclosed spaces. 3,628,521, Cl. 126-85.
Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Pyrazolopyridine carboxylic acid compounds and derivtives. 3,629,271, Cl. 260-295.5
Hoehn, Marvin M.: *See*—
Hamill, Robert L.; and Hoehn, Marvin M.,3,629,405.
Hoff, Charles Nicholas, to General Binding Corporation (Canada) Limited. Paper binding apparatus. 3,629,043, Cl. 156-358.
Hoffman, Herbert J., Jr. Fish deck. 3,628,204, Cl. 9-1.
Hoffmann, Gilbert F., to O'Neil Duro Company. Process for preparing an aqueous solution of polyvinyl alcohol-formaldehyde-urea polymer for use in wood finishing compositions. 3,629,177, Cl. 260-29.4
Hoffmann-La Roche Inc.: *See*—
Furst, Andor; and Muller, Marcel, 3,629,302.
Grethe, Guenter; Lee, Hsi Lin; and Uskokovic, Milan Radoje, 3,629,265.
Hofmann, Dieter; Kuhl, Bernhard; and Rasch, Erhard, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Low-pressure mercury vapor discharge lamp containing amalgam. 3,629,641, Cl. 313-229.
Hofmeister, Russell N., to Herter's, Inc. Demountable archery bow. 3,628,519, Cl. 124-24.
Holahan, Joseph M., to True Temper Corporation. Method of making sectional rods. 3,629,029, Cl. 156-189.
Holdstock, Norman G., to General Electric Company. Control of polyurethane foam process using polysiloxane polyether copolymer surfactant. 3,629,165, Cl. 260-2.5
Holfort, Horst: *See*—
Dobbelstein, Arnold; Hille, Hans-Dieter; and Holfort, Horst,3,629,201.
Hollingsworth, Elmont E.: *See*—
Gaarder, Gilbert W.; and Hollingsworth, Elmont E.,3,628,772.
Holt, William J., to Republic National Bank of Dallas, and Irving Trust Company and Union Bank, mesne. Vehicle switching apparatus. 3,628,462, Cl. 104-105.
Holtschmidt, Hans: *See*—
Beck, Gunther; and Holtschmidt, Hans,3,629,261.
Holtz, Herman. Thin sheet magnet. 3,629,756, Cl. 335-285.
Holzwarth, Robert W., to Ford Motor Company. Flat wiring harness routing arrangement. 3,629,783, Cl. 339-4.
Honda, Thomas S., to General Electric Company. Fluidic angular position sensor. 3,628,372, Cl. 73-37.
Honda, Thomas S., to General Electric Company. Vortex valve servoactuator. 3,628,418, Cl. 91-47.
Honeywell Inc.: *See*—
Luck, James R., 3,629,089.
Honeywell Information Systems Inc.: *See*—
Genuit, Luther L., 3,629,621.
Mikus, Leonard E.; and Harvey, William G., 3,629,831.
Hong, Charles A.: *See*—
O'Reilly, Anthony E.; and Hong, Charles A.,3,629,123.
Honjo, Mikio; Imai, Kinichi; and Kobayashi, Kunio, to Takeda Chemical Industries, Ltd. Method for the production of 2-mercaptoinosine. 3,629,236, Cl. 260-211.5
Hooker Chemical Corporation: *See*—
Frank, Arlen W.; and Baranauckas, Charles F., 3,629,326.

Greenbaum, Sheldon B.; Gelfand, Samuel; and Weil, Edward D., 3,629,421.
Schlichting, Hans L.; and Lichtblau, Ellis I., 3,629,339.

Hoover, Theodore S., to Sun Oil Company. Reduction of hydroperoxide content of cumene. 3,629,352, Cl. 260-674.

Hope, Ned A.: *See*—
Smuland, Robert J.; Hope, Ned A.; and Sidenstick, James E.,3,628,880.

Hopkins, Eileen Carlock,: *See*—
Hopkins, Milton S., 3,628,795.

Hopkins, Milton S., 50% to Hopkins, Walter Milton, Hopkins, Eileen Carlock, 50% to Gillogly, Lorin Roy, and Gillogly, Gwendolyn Maybeth, adjoint tenants. Intelligible information forming or suggesting device. 3,628,795, Cl. 273-161.

Hopkins, Richard H.: *See*—
Melamed, Nathan T.; Roland, George W.; and Hopkins, Richard H.,3,629,136.

Hopkins, Walter Milton,: *See*—
Hopkins, Milton S., 3,628,795.

Hopkinsons Limited: *See*—
Wells, Graham Melbourne; and Wooffindin, Frank, 3,628,553.

Hori, Hitoshi: *See*—
Nakata, Shinsaku; Hori, Hitoshi; Tagami, Kohei; and Suzuki, Masaru,3,628,987.

Hornig, Horst A.: *See*—
Bender, Alfred; and Hornig, Horst A.,3,628,567.

Hornung, Helmut O., to Smithe, F. L., Machine Company, Inc. Method of forming envelopes having inserts therein from a moving blank web. 3,628,304, Cl. 53-31.

Horstman, Gerald H.: *See*—
Christen, Roland W.; Guyeska, John C.; and Horstman, Gerald H.,3,629,684.

Horstmann, Harald; Wollweber, Hartmund; and Meng, Karl, to Farbenfabriken Bayer Aktiengesellschaft. Sulphonamides for treating hypertension. 3,629,442, Cl. 424-279.

Horvath, Roland J.; and Parsons, Charles G., to Diamond Shamrock Corporation. Composition of chlorinated glycolurils and metallic hypochlorites. 3,629,408, Cl. 424-149.

Hoste, Marcel B. Touch responsive oscillator controlled circuit. 3,629,665, Cl. 317-146.

Houdaille Industries, Inc.: *See*—
Pancook, James J., 3,628,231.
Slawson, Kenneth Leonard, 3,629,560.

Hough, Leslie; Turner, John Cameron; and Lewis, Anthony William, to Biorex Laboratories Limited. Derivatives of glycyrrhetinic acid. 3,629,231, Cl. 260-210.

Houghton, E. F., & Co.: *See*—
Miller, Albert R.; and Brooks, Douglass E., 3,629,173.

Houk, Richard D., to North American Rockwell Corporation. Energy receiving and storing single lever control for actuating one or more remote mechanisms. 3,628,393, Cl. 74-470.

Houston, John M., to United States of America, Air Force. Vent for nuclear-thermionic fuel rod. 3,629,063, Cl. 176-37.

Hovey, Richard J., to American Optical Corporation. Polyester filters containing copper II salts. 3,629,130, Cl. 252-300.

Howard, Carlton J.: *See*—
Beauchamp, William D.; Port, Eugene B.; and Howard, Carlton J.,3,628,919.

Howard, Charlie C. Fishing rod holder with bite signal. 3,628,275, Cl. 43-17.

Howe Folding Furniture, Incorporated: *See*—
Burr, Alan Carleton, 3,628,471.

Howe, Robert K.: *See*—
Baker, Joseph W.; and Howe, Robert K.,3,629,448.

Hoya Glass Works, Limited: *See*—
Masuda, Isao, 3,629,137.

Hoyt, Kenneth C. Afterburner. 3,628,903, Cl. 431-202.

Huber, Joel E., to Upjohn Company, The. 1α,3-di lower alkoxy-21-carlio-lower alkoxy- pregna-3,5-diene and process for the production thereof. 3,629,299, Cl. 260-397.1

Hucks, Robert T., Jr.: *See*—
Thiele, William C.; Barger, Charles H.; Thomas, Joseph J.; and Hucks, Robert T., Jr.,3,628,991.

Huebler, Jack; Rosenberg, Robert B.; and Kardas, Alan, to Institute of Gas Technology. Smooth top kitchen range. 3,628,902, Cl. 431-2.

Hugener, Hanspeter: *See*—
Volker, Theodor; and Hugener, Hanspeter,3,629,203.

Hull, David C.; Hagemeyer, Hugh J., Jr.; and Etter, Raymond L., Jr., to Eastman Kodak Company. Polyolefin pigment concentrates. 3,629,186, Cl. 260-41.

Hunt, George H., to Simplex Wire and Cable Company. Solid dielectric polyolefin compositions containing voltage stabilizers. 3,629,110, Cl. 252-63.2

Hunt, John William Archibald; and Potter, Bernard Alan, to Lucas, Joseph, (Industries) Limited. Method of making dynamo electric machines. 3,628,239, Cl. 29-596.

Hunter, Robert Tweedy: *See*—
Elkind, Vincent Theodore; and Hunter, Robert Tweedy,3,628,997.

Huppert, Max. Leader pipe attachment. 3,628,668, Cl. 210-446.

Hurst, Robert Norman, to RCA Corporation. Signal processor for dropout correction before demodulation. 3,629,494, Cl. 178-6.6

Hussain, Anwar A., to American Home Products Corporation. Stabilized 2-pam solutions. 3,629,425, Cl. 424-263.

Hustad, Gerald Orton: *See*—
Richardson, Thomas; and Hustad, Gerald Orton,3,629,162.

Hutt, Richard Stuart, to Primore Sales, Inc. Quick connecting coupling. 3,628,768, Cl. 251-148.

Hydrocarbon Research, Inc.: *See*—
Meisler, Joseph; Van Baush, Edward Harold; and Banikiotes, Gregory Christ, 3,628,340.

Ichijo, Bunjiro. Precision variable resistor for high frequency use. 3,629,701, Cl. 324-62.

Ideal Toy Corporation: *See*—
Stopek, Benjamin, 3,628,262.

Idelson, Elbert M., to Polaroid Corporation. Ligands which are also silver halide developing agents. 3,629,336, Cl. 260-590.

Igarashi, Hiroshi: *See*—
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi,3,629,428.

Ignatovich, Tatyana Danilovna: *See*—
Kargin, Valentin Alexeevich; Cherneva, Elena Pavlovna; Ignatovich, Tatyana Danilovna; Tunitsky, Nikolai Nikolaevich; and Toroptseva, Tatyana Nikolaevna,3,629,082.

Illinois Tool Works Inc.: *See*—
Gutshall, Charles E., 3,628,584.
Owen, Ronald C.; and Jurin, Robert J., 3,628,305.
Poupitch, Ougljesa Jules, 3,628,823.

Imai, Kinichi: *See*—
Honjo, Mikio; Imai, Kinichi; and Kobayashi, Kunio,3,629,236.

Imbert, Pierre, to Service d'Exploitation Industrielle des Tabac et, des Allumettes. Device for cutting sheet material. 3,628,409, Cl. 83-175.

Imperial Camera Corporation: *See*—
Irwin, George, 3,628,431.

Imperial Chemical Industries Limited: *See*—
Ghosh, Ranajit; and Bishop, Nigel Douglas, 3,629,474.
Knapp, Peter Edwin, 3,629,386.
Maguire, John Anthony; and Rose, Francis Leslie, 3,629,260.
Waring, Wilson Shaw, 3,629,453.

Impola, Clarence N.: *See*—
McKillip, William J.; and Impola, Clarence N.,3,628,992.

In 'T Veld, Cornelis, to Rotterdams Havenreinigingen Transport Bedrijf. Separator for nonmiscible liquids. 3,628,660, Cl. 210-104.

Inaba, Shigeho: *See*—
Arasaki, Seitetsu; Wakimura, Atsushi; Yamamoto, Hisao; and Inaba, Shigeho,3,629,238.

Indiana Cash Drawer Company: *See*—
Showers, Joseph R., Jr., 3,628,724.

Industrie-Werke Karlsruhe Aktiengesellschaft: *See*—
Enneking, Heinrich; and Jahrig, Gunter, 3,628,741.
Schuster, Wilhelm; and Grether, Adolf, 3,628,646.

Infinite Q Corporation: *See*—
Dimon, Donald F., 3,629,716.

Information Storage Systems, Inc.: *See*—
Halfhill, Martin O., 3,629,679.

Ingersoll-Rand Company: *See*—
Raseley, Le Roy J., 3,628,776.

Inmont Corporation: *See*—
Rubin, Herbert, 3,629,087.

Inoue, Touru; and Tachibana, Masakiyo, to Nippon Sheet Glass Co., Ltd. Preparation of glass containing selenium. 3,628,932, Cl. 65-18.

Institut Pasteur: *See*—
Relyveld, Edgar; and Henoco, Emile, 3,629,400.

Institute of Gas Technology: *See*—
Huebler, Jack; Rosenberg, Robert B.; and Kardas, Alan, 3,628,902.

Institute of Medical Sciences, The: *See*—
Collins, Carter C., 3,628,193.

Instrument AB Scanditronix: *See*—
Nilsson, Nils Robert, 3,629,605.

Intelectron Corporation: *See*—
Puharih, Henry K.; and Lawrence, Joseph L., 3,629,521.

Inter-Probe, Inc.: *See*—
Blomgren, Oscar C., Jr., 3,629,584.

Interlake Steel Corporation: *See*—
Kwiatkowski, Gerald M.; and Redelman, Paul E., 3,628,463.

Internationa Business Machines Corporation: *See*—
Newton, John D., 3,629,853.

International Business Machines Corporation: *See*—
Bloom, Earl M., Jr., 3,629,825.
Blum, Samuel E.; and Chicotka, Richard J., 3,628,998.
Bossen, Douglas C., 3,629,824.
Capozzi, Anthony J., 3,629,860.
Cralle, Walter O., Jr.; Simpson, Henry W.; and Kockler, Barry C., 3,628,644.
Cutaia, Alfred; McCullough, John W.; and Piller, Don W., 3,629,826.
Demer, Frederick M., 3,629,828.
Gibson, Robert G.; Greenberg, Allan; and Wilcox, John D., 3,629,848.
Grimm, Marian Andreas, 3,629,517.
Johnston, David L.; and Nelson, Paul E., 3,629,827.
Lubart, Neil D.; and Vora, Madhukar B., 3,629,667.
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert, 3,628,717.
Merrill, John F., 3,629,740.
Ordower, Robert, 3,629,829.
Schmookler, Martin S.; and Weinberger, Arnold, 3,629,565.

International Computers Limited: *See—*
Scarrott, Gordon George; and Mc Cormick, Thomas M., 3,629,830.
International Flavors & Fragrances Inc.: *See—*
Evers, William J., 3,629,292.
International Harvester Company: *See—*
Morkoski, James, 3,628,610.
International Microwave Corporation: *See—*
Chasek, Norman E., 3,629,706.
International Standard Electric Corporation: *See—*
Boeve, Gerard J. C., 3,628,787.
Staiger, Bruno, 3,628,402.
Woodhead, Harry Stanley, 3,629,749.
International Telephone & Telegraph Corporation: *See—*
Rue, Charles V., 3,628,292.
International Telephone and Telegraph Corporation: *See—*
Beller, Hans Albert; and Burgdorf, Jochen, 3,628,636.
Clark, James M., 3,629,712.
Karchmar, Arthur, 3,628,971.
Ostwald, Fritz; and Nonn, Gerhard, 3,628,571.
Irving Trust Company and Union Bank: *See—*
Holt, William J., 3,628,462.
Irwin, George, to Imperial Camera Corporation. Firing and synchronizing mechanism for percussion-ignitable flash lamps. 3,628,431, Cl. 95-11.5
Isaacson, Calvin, to Shipley Company, Inc. Method coating of photoresist on circuit boards. 3,629,036, Cl. 156-2o1.
Isham, Allan B.; and Shenk, Wilbur, III, to Owens-Corning Fiberglas Corporation. Method for reinforcing a thermoplastic article. 3,629,026, Cl. 156-161.
Ishibashi, Masato: *See—*
Kawabe, Ushio; Kudo, Mitsuhiro; Ishibashi, Masato; and Doi, Toshio,3,629,753.
Ishibashi, Noboru: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.
Ishido, Teruhisa: *See—*
Akamatsu, Kiyoshi; Hagihara, Takeaki; and Ishido, Teruhisa,3,628,963.
Ishikawa, Toshikatsu; and Teranishi, Haruo, to Nippon Carbon Company, Limited. Method for the manufacture of heat resistant carbonaceous products having low permeability. 3,628,984, Cl. 117-46.
Israel, The State of: *See—*
Leuw, David; and Dror, Meir, 3,628,824.
Isreeli, Jack; Kassel, Aaron; and Dannewitz, Robert, to Technicon Corporation. Method for the minimization of the effects of pulsations in intermittent pumping systems. 3,628,891, Cl. 417-53.
Isserlis, Morris D. Ferrite powder and method of preparing it. 3,629,118, Cl. 252-62.54
Itakura, Jo; Tanaka, Hisao; and Ito, Hiroo, to Toagosei Chemical Industry Co., Ltd. Process for producing cyclododecatriene. 3,629,349, Cl. 260-666.
Ito, Hiroo: *See—*
Itakura, Jo; Tanaka, Hisao; and Ito, Hiroo,3,629,349.
Itoga, Masaaki: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.
ITT Industries, Inc.: *See—*
Bender, Alfred; and Hornig, Horst A., 3,628,567.
Ivan Sorvall, Inc.: *See—*
Blum, Josef, 3,628,386.
Ivashkov, Ilya Ilich; and Frolovtsev, Vasily Alexandrovich. Multirow flat-link chain. 3,628,392, Cl. 74-245.
Iwasa, Hitoo: *See—*
Yokozawa, Masami; and Iwasa, Hitoo,3,629,666.
Iwasaki, Koichiro; Yamaguchi, Kazuo; Matsuura, Junichi; Hasuo, Masayoshi; and Kojima, Kazuhisa, to Mitsubishi Chemical Industries Limited. Process for the polymerization of olefins. 3,629,216, Cl. 260-88.2
Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Stabilizer for archery bow. 3,628,520, Cl. 124-30.
Jachimowicz, Ludwik; and Masterson, Joseph B., to General Cable Corporation. Cable sheating. 3,629,489, Cl. 174-107.
Jackson, Albert Edward; and Russell, Robert Gordon, to Summers, John, & Sons Limited. Apparatus for coating a surface of a substrate with powdered material. 3,628,501, Cl. 118-630.
Jackson, Geoffrey Norman; and Priestland, Colin Richard Douglas, to Edwards High Vacuum International Limited. In or relating to vacuum apparatus. 3,629,095, Cl. 204-298.
Jackson, Robert C.; Mueller, James C.; and Hardy, Edgar E. Word printer educational aid. 3,628,453, Cl. 101-111.
Jacobson, Nathaniel J. Fine and graphic arts products for enabling amateurs and others to select and utilize color materials with optical results of increased predictability. 3,628,260, Cl. 35-28.5
Jacobson, Sylvester O.; and Arneson, Norman M., to Jams, Ltd. Packaging apparatus. 3,628,306, Cl. 53-182.
Jacobus, David P.: *See—*
Heiffer, Melvin H.; and Jacobus, David P.,3,629,410.
Jahrig, Gunter: *See—*
Enneking, Heinrich; and Jahrig, Gunter,3,628,741.
Jakobi, Gunter, to Henkel & Cie G.m.b.H. Low-foaming rinsing and washing agents for dish washers. 3,629,122, Cl. 252-89.
Jakobsen, Kjell Mosvoll: *See—*
Haggard, Nils Olof; Murne, Bertil Sven Oskar; and Jakobsen, Kjell Mosvoll,3,628,688.
James, John William: *See—*
Gittos, Maurice Ward; James, John William; and Wiggins, Leslie Frederick,3,629,463.
Jampolsky, Arthur, to Optical Sciences Group, Incorporated. Flexible Fresnel refracting membrane adhered to ophthalmic lens. 3,628,854, Cl. 351-275.
Jams, Ltd.: *See—*
Jacobson, Sylvester O.; and Arneson, Norman M., 3,628,306.
Jamshidi, Khosrow. Biopsy needle. 3,628,524, Cl. 128-2.
Janke, Bernhard: *See—*
Frach, Werner; and Janke, Bernhard,3,628,426.
Janning, John L., to National Cash Register Company, The. Removable electrode display device. 3,629,654, Cl. 315-246.
Jansson, Robert A.; and Rau, Frank J., to PPG Industries, Inc. Welding glass sheets. 3,628,935, Cl. 65-40.
Japanese National Railways,: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, 3,629,707.
Jefferson Chemical Company, Inc.: *See—*
Tomomatsu, Hideo, 3,629,325.
Jefferson, Donald E.; and Marans, Nelson S., to Grace, W. R., & Co. Process for increasing the wet strength of cellulosic materials. 3,629,178, Cl. 260-29.4
Jehle, Fritz: *See—*
Wenz, Herbert; and Jehle, Fritz,3,628,482.
Jennings, Roy E., to Royal Seating Corporation. Chair construction. 3,628,832, Cl. 297-451.
Jex, Victor B.: *See—*
Bailey, Donald L.; and Jex, Victor B.,3,629,309.
Jobin, A., & G. Yvon Instruments de Precision: *See—*
Flamand, Jean; Labeyrie, Antoine; and Pieuchard, Guy, 3,628,849.
Johansson, Arne, to Allmanna Svenska Elektriska Aktiebolaget. Static converter station connected to a D.C. transmission line over a D.C. reactor with lightning arrester protection means. 3,629,685, Cl. 321-13.
Johansson, Torkel: *See—*
Helge, Anders; and Johansson, Torkel,3,629,658.
Johns-Manville Corporation: *See—*
Harris, Walter William, 3,628,930.
Thiele, William C.; Barger, Charles H.; Thomas, Joseph J.; and Hucks, Robert T., Jr., 3,628,991.
Johnson & Johnson: *See—*
Loyer, Michael, 3,628,533.
Johnson, Donald Owen: *See—*
Groasdale, William Herbert; and Johnson, Donald Owen,3,628,307.
Johnson, Donn A., to National Cash Register Company, The. MICR double feed detector. 3,629,822, Cl. 340-146.3
Johnson, Gordon P.; and Gerlach, Le Roy E., to Sperry Rand Corporation. Nozzle and control apparatus. 3,628,726, Cl. 239-101.
Johnson, Martin H., to ESB Incorporated. Thin, electrically conductive, nonporous polymeric film. 3,629,154, Cl. 252-511.
Johnson, Richard M., to LTV Electrosystems, Inc. Airfoil member. 3,628,756, Cl. 244-42.
Johnson, Richard N., to United States of America, Army. Pure fluid display. 3,628,268, Cl. 40-28.
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W., to Mattel, Inc. Articulated fashion doll. 3,628,282, Cl. 46-161.
Johnsson, John Gillis, to Sunne Gummifabrik AB. Vehicle lamp housing. 3,629,569, Cl. 240-7.1
Johnston, David L.; and Nelson, Paul E., to International Business Machines Corporation. System and method for determining the position, height and width of a character marking. 3,629,827, Cl. 340-146.3
Johnston, James J.: *See—*
Cattey, Edward P.; Poturnicki, Raymond H.; Johnston, James J.; and Bedard, Walter J.,3,629,662.
Johnston, Mervyn Bradshaw: *See—*
Blair, Gordon Purves; and Johnston, Mervyn Bradshaw,3,628,518.
Jonaitis, Charles W.; and Elmquist, Lyle E., to General Mills, Inc. Urethane diisocyanates. 3,629,319, Cl. 260-468.
Jones, Edwin K., to Universal Oil Products Company. Distillation of styrene containing a polymerization inhibitor and contacting the bottoms steam with an alcohol. 3,629,076, Cl. 203-9.
Jones, Faber B., to Phillips Petroleum Company. Elastomers from high-vinyl conjugated diene polymers. 3,629,172, Cl. 260-23.7
Jones, James J.: *See—*
Taylor, Jefferson H.; and Jones, James J.,3,629,695.
Jones, John Michael: *See—*
Spencer-Bate, Harry Arthur Hele; and Jones, John Michael,3,628,865.
Jones, Peter Hadley, to Abbott Laboratories. 2'O-Alkanoyl-4'-alkanoyloxy derivatives of erythromycin. 3,629,232, Cl. 260-210.
Jones, Trevor O., to General Motors Corporation. Acceleration sensor. 3,628,384, Cl. 73-514.
Jordan, Manuel A.; and Petersen, Kenneth C., to Schenectady Chemicals, Inc. Anacardic acid reacted with tris(hydroxyethyl) Isocyanurate. 3,629,195, Cl. 260-46.
Joyner, Frederick B.: *See—*
Coover, Harry W., Jr.; and Joyner, Frederick B.,3,629,222.

Jungjohann, Vernon H.; Adamski, Henry S.; and Richardson, Stephen M., to Eastman Kodak Company. Filmstrip adapter for slide projectors. 3,628,856, Cl. 353-68.

Jurin, Robert J.: *See—*
Owen, Ronald C.; and Jurin, Robert J.,3,628,305.

JWI Ltd.: *See—*
Woodward, Derrick R.; and Stucki, Daniel, 3,629,058.

K & R Industries Inc.: *See—*
Rowe, Murray A., 3,628,264.

Kabacoff, Bernard L.; and Fairchild, Charles M., to Revlon, Inc. Stabilization of urea peroxide. 3,629,331, Cl. 260-555.

Kabitzke, Karlheinz: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.

Kabushiki Kaisha Daini Seikosha: *See—*
Morita, Katsuhiko, 3,628,325.

Kabushiki Kaisha Koparai: *See—*
Takayama, Masoa; and Arai, Kiyoyuki, 3,628,433.

Kabushiki Kaisha Ricoh: *See—*
Okuno, Zenjiro, 3,629,117.

Kabushiki Kaisha Suwa Seikosha: *See—*
Abe, Kenji, 3,628,327.

Kabushiki Kaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.): *See—*
Koike, Kunio; Mito, Akoo; and Dezaki, Masayasu, 3,628,674.

Kadow, Hermann: *See—*
Penzel, Hans-Joerg; and Kadow, Hermann,3,629,730.

Kaether, Willy; and Backofen, Hans-Dieter, to Braunschweigische Maschinenbauanstalt. Method and apparatus for extracting sugar from bagasse. 3,629,002, Cl. 127-5.

Kaether, Willy; Dietzel, Walter; and Backofen, Hans-Dieter, to Braunschweigische Maschinenbauanstalt. Method and apparatus for the continuous counter current extraction of sugar from bagasse. 3,629,001, Cl. 127-5.

Kahn, Herbert. Self educational device. 3,628,259, Cl. 35-9.

Kahn, Rolf, 5 Day Division of Associated Products, Inc. Two-hole aerosol button. 3,628,733, Cl. 239-337.

Kaiser Aluminum & Chemical Corporation: *See—*
Bristol, Donald R., 3,629,079.

Kaiser, Carl; and Zirkle, Charles L., to Smith Kline & French Laboratories. Benzoheterocyclicalkyl derivatives of 4-(2-keto-1-benzimidazolinyl)-piperidine, 4-(2-keto-1-benzimida- zolinyl)1,2,3,6-tetrahydropyridine, 1-phenyl-1,3,8-triazaspiro[4,5]decan-4-one and 2,4,9-triazaspira [5,5]undecan-1,3,5-trione. 3,629,267, Cl. 260-294.

Kajimoto, Tsunesuke: *See—*
Tsuji, Jiro; and Kajimoto, Tsunesuke,3,629,286.

Kaken Kagaku Kabushiku Kaisha: *See—*
Fujita, Shigeo; Takatsu, Akihiko; and Shibuya, Kunitoyo, 3,629,233.

Kalisky, Benedikt: *See—*
Somora, Zdeno; Zavodsky, Ladislav; and Kalisky, Benedikt,3,628,667.

Kalopissis, Gregoire; and Abegg, Jean-Louis, to Societe Anonyme dite: L'Oreal. Permanent wave-fixing composition and process. 3,628,544, Cl. 132-7.

Kalopissis, Gregoire; and Manoussos, Georges, to L'Oreal. Method of reducing excessive secretions of sebum by oral administration of amino acid derivatives. 3,629,452, Cl. 424-319.

Kamada, Hatohiko; and Tashiro, Kouich, to Fuji Shashin Film Kabushiki Kaisha. Electroless plating pretreatment method. 3,628,990, Cl. 117-71.

Kamada, Takayoshi; Nagai, Nobuo; and Tada, Shoji, to Mitsubishi Denki Kabushiki Kaisha. Lightning arrest assembly. 3,629,660, Cl. 317-69.

Kamborian, Jacob S.: *See—*
Typrowicz, Wladyslaw; and Springer, Otto M., 3,628,208.

Kamborian, Jacob S. Control system interconnecting the operation of two machines. 3,628,207, Cl. 12-1.

Kamlade, William G., Jr.: *See—*
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kamlade, William G., Jr.,3,629,413.

Kanarek, Alexander David; and Tribe, George William, to Burroughs Welcome & Co. (U.S.A.) Inc. Process for purification of animal RNA viruses. 3,629,470, Cl. 424-89.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Kimura, Isao; and Ogata, Fuminaro, 3,629,053.

Kaneko, Shiro: *See—*
Kobayashi, Masayoshi; and Kaneko, Shiro,3,628,889.

Kantor International S.A.: *See—*
Mazza, Lamberto, 3,628,444.

Karchmar, Arthur, to International Telephone and Telegraph Corporation. Cedar polyphenols and thiodipropionic acid as antioxidants for use in animal fats and vegetable oils. 3,628,971, Cl. 99-163.

Kardas, Alan: *See—*
Huebler, Jack; Rosenberg, Robert B.; and Kardas, Alan,3,628,902.

Kargin, Valentin Alexeevich; Cherneva, Elena Pavlovna; Ignatovich, Tatyana Danilovna; Tunitsky, Nikolai Nikolaevich; and Toroptseva, Tatyana Nikolaevna. Process for producing homogeneous polymeric cation-exchange materials. 3,629,082, Cl. 204-159.14

Karmas, George, to Ortho Pharmaceutical Corporation. Derivatives of the 2-(lower alkyl)-3-(lower alkyl)- 4-phenyl-3- or 4-cyclohexenecarboxylic acids. 3,629,269, Cl. 260-294.3

Karn, Jack L.: *See—*
Gergel, William C.; Karn, Jack L.; and King, Laurence E.,3,629,109.

Kaspers, Helmut: *See—*
Malz, Hugo; Grewe, Ferdinand; Dorken, August; and Kaspers, Helmut,3,629,458.

Kassel, Aaron: *See—*
Isreeli, Jack; Kassel, Aaron; and Dannewitz, Robert,3,628,891.

Kastler, Alfred H.: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude,3,629,697.

Katanosaka, Akisato: *See—*
Arakawa, Morimasa; Katanosaka, Akisato; and Chikazawa, Masafumi,3,629,221.

Katayama, Hideo, to Fuji Denki Seizo Kabushiki Kaisha. Low-noise transformer device. 3,629,757, Cl. 336-55.

Kato, Mikio. Surgical instrument drill for biopsy. 3,628,522, Cl. 128-2.

Kato, Toshio: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo,3,628,219.

Katsuya, Noboru; Sagara, Takaaki; Takahashi, Reiji; and Ojima, Takashi, to Ajinomoto Co., Inc. Process for producing enriched artificial rice. 3,628,966, Cl. 99-80.

Katzman, Frederick. Protective coping for a swimming pool. 3,628,198, Cl. 4-172.21

Kauffman, Sidney L., Jr.: *See—*
Fraunfelder, James A.; Getz, Frank C., Jr.; Kauffman, Sidney L., Jr.; and Kurlans, William H.,3,629,837.

Kaufman, Edward J. Agricultural implement end frames lift means. 3,628,613, Cl. 172-311.

Kaufman, Martin H.; and O'Drobinak, John D., to United States of America, Navy. Castable fluorocarbon composite propellants. 3,629,020, Cl. 149-19.

Kaufmann, Hans P.: *See—*
Baumgartner, Werner R.; and Kaufmann, Hans P.,3,628,323.

Kaul, Balkrishena: *See—*
Staba, Emil John; and Kaul, Balkrishena,3,628,287.

Kauppila, James E., to General Motors Corporation. Passivated wire bonded semiconductor device. 3,629,669, Cl. 317-235.

Kawabata, Sueo: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo,3,628,219.

Kawabe, Ushio; Kudo, Mitsuhiro; Ishibashi, Masato; and Doi, Toshio, to Hitachi, Ltd. Magnetic floating device using hard superconductor. 3,629,753, Cl. 335-216.

Kawai, Nobuyuki: *See—*
Hashimoto, Osamu; and Kawai, Nobuyuki,3,628,802.

Kawakami, Yoshiyuki: *See—*
Masuda, Toru; Saw, Yoichi; Kawakami, Yoshiyuki; and Miyano, Seiji,3,629,268.

Kawam, Antoine; and Ernest, Michael V., to Grace, W. R., & Co. Whisker reinforced binders for laminated composites and adhesives. 3,629,184, Cl. 260-38.

Kawamoto, Hiroshi: *See—*
Onishi, Akira; Fujio, Ryota; Kojima, Minoru; and Kawamoto, Hiroshi,3,629,213.

Kawamura, Shigeo; Hirano, Takayoshi; Takamura, Shuichi; and Okazaki, Masahiko, to Yamanouchi Pharmaceutical Co., Ltd. Process for the preparation of B-form microcrystalline chloramphenicol palmitate. 3,629,306, Cl. 260-404.5

Kawano, Shigemi: *See—*
Morita, Kiyoshi; and Kawano, Shigemi,3,628,425.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Terai, Kiyoshi; Kurioka, Tatsumi; Takeuchi, Hideshi; and Nakao, Zirou, 3,628,338.

Kawashima, Yoshichi: *See—*
Sakurai, Michio; and Kawashima, Yoshichi,3,629,623.

Kawasumi, Shohachi: *See—*
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi,3,629,215.

Kay Manufacturing Corporation: *See—*
Krakauer, Daniel, 3,628,201.

Keatinge, Gerald R.; and Young, Herman S. W., to Sperry Rand Corporation. Operator manipulative control apparatus. 3,628,394, Cl. 74-471.

Keckler, Norman F., to Firestone Tire & Rubber Company, The. Polymer and process. 3,629,223, Cl. 260-94.2

Kefalas A/S: *See—*
Petersen, Povl V.; Lassen, Niels; and Hjortkjaer, Jes, 3,629,444.

Kehoe, Ellsworth A.; and Stoltman, Donald D., to General Motors Corporation. Carburetor. 3,628,773, Cl. 261-23.

Keller, Ernst: *See—*
Heller, Hansjorg; Rody, Jean; and Keller, Ernst,3,629,191.
Heller, Hansjorg; Rody, Jean; and Keller, Ernst,3,629,192.

Keller, Hans, to Hell, Rudolf, Kommanditgesellschaft Kiel. Method for electronic color correction. 3,629,490, Cl. 178-5.2

Kelley, Kane L.: *See—*
Silber, Robert H.; Kelley, Kane L.; and Trenner, Idamae G.,3,629,412.

Kelly, Robert J.: *See—*
Quaal, George J.; Schaefer, William L.; and Kelly, Robert J.,3,629,106.

Kelmar, John J. Non-polluting constant output electric power plant. 3,628,332, Cl. 60-105.
Kelso, Robert Gladden: *See—*
Lundberg, Robert Dean; Del Giudice, Frank Paul; and Kelso, Robert Gladden,3,629,374.
Kelver, William L., Jr.: *See—*
Burcham, Ronald E.; and Kelver, William L., Jr.,3,629,780.
Kemeny, George A.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A.,3,629,553.
Kendall Company, The: *See—*
Komp, Joseph C., 3,628,502.
Kennedy, Frank, to United States Steel Corporation. Inner cover and method of making the same. 3,628,778, Cl. 263-49.
Kernan, George L. Flare dispensing and igniting apparatus. 3,628,416, Cl. 89-1.5
Kerr McGee Chemical Corporation: *See—*
Baldwin, Roger A.; and Cheng, Ming T., 3,629,296.
Kester, Jack R.; Multhaup, Ray D.; Roberts, William R.; Townsend, Raymond L.; and Young, Kenneth A., to Tweco Products, Inc. Semi-automatic welding apparatus. 3,629,547, Cl. 219-130.
Keuffel and Esser Company: *See—*
Robillard, Jean J. A., 3,628,954.
Kharinskaya, Marina Anatolievna; and Obraztsov, Alexei Ivanovich. Ferrite and method of manufacturing the same. 3,629,157, Cl. 252-62.59
Kidde, Walter, & Company, Inc.: *See—*
Amato, Ernest J., 3,629,812.
Cirillo, John, 3,628,550.
Cirillo, John, 3,628,809.
Kiepert, Klaus: *See—*
Benedikter, Kurt; Hagel, Karl Otto; and Kiepert, Klaus,3,629,212.
Kikuchi, Takahiko: *See—*
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi,3,629,428.
Kilduff, Timothy J., to United States of America, Army. Reserve battery electrodes using bonded active materials. 3,629,007, Cl. 136-27.
Kim, Yung Ki; and Pierce, Ogden R., to Dow Corning Corporation. Fluorosilicone lubricants containing tris (pentafluorophenyl) phosphine. 3,629,115, Cl. 252-49.9
Kimberly-Clark Corporation: *See—*
Frick, Richard H., 3,629,039.
Kimura, Eiichi. Cap for aerosol container. 3,628,702, Cl. 222-402.13
Kimura, Isao; and Ogata, Fuminaro, to Kanegafuchi Boseki Kabushiki Kaisha. Novel polyamide and fiber thereof. 3,629,053, Cl. 161-173.
Kimura, Yoshiaki; Sano, Yoshiharu; Kumazawa, Ryoji; and Hisayasu, Yokohama, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of insulating armature coils. 3,629,024, Cl. 156-56.
Kindorf, David O.: *See—*
Kindorf, Robert D.; and Kindorf, David O.,3,628,760.
Kindorf, Robert D.; and Kindorf, David O. Hanger for supporting insulated pipe. 3,628,760, Cl. 248-59.
Kindred, William B., to Gulf & Western Industries, Inc. Stereo balance and fader potentiometer. 3,629,775, Cl. 338-128.
King, Alfred T. Apparatus and method for concentration of liquid bearing solids by freezing. 3,628,344, Cl. 62-58.
King, Alfred T. Ice-liquid separation column. 3,628,345, Cl. 62-123.
King, John: *See—*
Cairns, Hugh; Hazard, Richard; and King, John,3,629,290.
King, Laurence E.: *See—*
Gergel, William C.; Karn, Jack L.; and King, Laurence E.,3,629,109.
King, Louis T. Conduit connection means. 3,628,815, Cl. 285-334.4
King, Philip E.; and Finne, Paul C., to Alpha Industries, Inc. Broadband biasing circuit cooperating with switch to establish broad-band RF filter path between input and output ports. 3,629,732, Cl. 333-7.
King, Roderick V.: *See—*
Hendrickson, Richard F.; and King, Roderick V.,3,628,699.
King, Thomas M., to Monsanto Company. Bleaching, sterilizing, disinfecting, and deterging compositions. 3,629,124, Cl. 252-99.
Kirchner, Egon: *See—*
Stehle, Max; and Kirchner, Egon,3,628,710.
Kirkpatrick, Maurice; and Waggener, Donnell E. Safety apparatus for petroleum wells. 3,628,605, Cl. 166-226.
Kirschnek, Helmut; Hildebrand, Dietrich; Hendricks, Udo-Winfried; Meier, Gerhard; and Quaedvlieg, Mathieu, to Farbenfabriken Bayer Aktiengesellschaft. Process for dyeing or printing fibre materials containing NH-groups. 3,628,905, Cl. 8-54.
Kissel, Thomas L. Tapping apparatus for beverage kegs. 3,628,701, Cl. 222-400.7
Kitahonoki, Keizo; and Kotera, Katsumi, to Shionogi & Co., Ltd. Process for preparing aziridine derivatives. 3,629,239, Cl. 260-239.
Kitaj, Walter: *See—*
Hider, Shibley A.; Kitaj, Walter; and Martin, Robert E.,3,628,985.
Kitamura, Shuji: *See—*
Yamanouchi, Saburo; Yasuno, Kiyoshi; and Kitamura, Shuji,3,629,170.
Kite, Kenneth F.: *See—*
Hinton, Brian J.; and Kite, Kenneth F.,3,629,040.
Kitz, Norbert: *See—*
Drage, James John; and Kitz, Norbert,3,629,564.
Kiwitz, Heinrich, to Machinenfabrik Augusburg-Nurnberg Aktiengesellschaft. Engine hood for a truck. 3,628,622, Cl. 180-69.
Klein, Bruce W., to Bendix Corporation, The. Disk brake rotor scraper and wear indicator means. 3,629,814, Cl. 340-52.
Klein, Eberhard; and Zabel, Hans-J., to Blaupunkt-Werke GmbH. Multi-channel dynamic level control circuit. 3,629,718, Cl. 330-29.
Kleinsorge, Adolph H., to Knight, W. B., Machinery Co. Optical reader assembly. 3,628,498, Cl. 116-115.
Kleiss, Louis D., to Phillips Petroleum Company. Internal reflux computer for fractionation column control. 3,629,561, Cl. 235-151.12
Klenzoid, Inc.: *See—*
Derham, James J.; and Morgan, Edward R., 3,628,663.
Kliment, Karel: *See—*
Stol, Miroslav; Stoy, Vladimir; Kliment, Karel; Prokes, Milan; and Mares, Jaromir,3,628,988.
Klotz, Gunther; and Schwarz, Hans Helmut, to Farbenfabriken Bayer Aktiengesellschaft. Process for separating and purifying crystals from a crystal suspension. 3,628,341, Cl. 62-58.
Knapp, Heinrich; and Eckert, Konrad, to Bosch, Robert, G.m.b.H. Measuring device for a fuel injection system. 3,628,515, Cl. 123-119.
Knapp, Peter Edwin, to Imperial Chemical Industries Limited. Process for crimping filaments. 3,629,386, Cl. 264-168.
Knapsack Aktiengesellschaft: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi, 3,628,739.
Knebusch, George R., to American Standard Inc. Air cooler having multiple cooling coils. 3,628,590, Cl. 62-290.
Knedlik, Omar S.; and Stouder, Virgil. Fishing rod holder. 3,628,759, Cl. 248-42.
Kneier, Joseph W.: *See—*
Wynne, Donald T.; Workman, David E.; and Kneier, Joseph W.,3,628,843.
Knight, W. B., Machinery Co.: *See—*
Kleinsorge, Adolph H., 3,628,498.
Knoepfler, Nestor B.; and Koenig, Paul A., to United States of America, Agriculture. Process for imparting flame-retardancy to resin-treated cotton batting. 3,629,052, Cl. 161-170.
Knox, William M., to United States of America, Atomic Energy Commission. Apparatus for increasing power density in a boiling liquid nuclear reactor. 3,629,065, Cl. 176-54.000
Knuchel, Max, to Schweizerische Industrie-Gesellschaft. Package. 3,628,656, Cl. 206-46.
Kobayashi, Akiyoshi; and Nomura, Kikujiro, to Toyoda Koki Kabushiki Kaisha. Apparatus for intercepting air films rotating with grinding wheels. 3,628,293, Cl. 51-267.
Kobayashi, Kunio: *See—*
Honjo, Mikio; Imai, Kinichi; and Kobayashi, Kunio,3,629,236.
Kobayashi, Masayoshi; and Kaneko, Shiro, to Diesel Kiki Kabushiki Kaisha. Hydraulic injection time controlling device in fuel injection pumps. 3,628,889, Cl. 417-221.
Koblischek, Peter: *See—*
Dithmar, Karl; and Koblischek, Peter,3,628,906.
Kockler, Barry C.: *See—*
Cralle, Walter O., Jr.; Simpson, Henry W.; and Kockler, Barry C.,3,628,644.
Kodama, Tsutomu: *See—*
Kodama, Yutaka; Kodama, Tsutomu; and Nakabayashi, Masao,3,629,378.
Kodama, Yutaka; Kodama, Tsutomu; and Nakabayashi, Masao, to Toyama Chemical Co., Ltd. Method of extracting tri-substituted hydrocarbyl phosphates. 3,629,378, Cl. 260-990.
Koehler, Dale R.; and Grissom, John T. Timepiece with radioactive timekeeping standard. 3,629,582, Cl. 250-71.5
Koenig, Paul A.: *See—*
Knoepfler, Nestor B.; and Koenig, Paul A.,3,629,052.
Kohn, Edward M., to Sun Oil Company. Lubrication improvements via diffusion. 3,629,012, Cl. 148-6.14
Kohus, Francis E., 35% to Betz, Clarence S. Flexible feed member for card folding apparatus. 3,628,784, Cl. 270-61.
Koike, Kunio; Mito, Akoo; and Dezaki, Masayasu, to Kabushiki Kaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.). Industrial robot. 3,628,674, Cl. 214-1.
Koizumi, Shun: *See—*
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nakazima, Takeaki,3,629,383.
Kojima, Kazuhisa: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Matsuura, Junichi; Hasuo, Masayoshi; and Kojima, Kazuhisa,3,629,216.
Kojima, Minoru: *See—*
Onishi, Akira; Fujio, Ryota; Kojima, Minoru; and Kawamoto, Hiroshi,3,629,213.
Kolar, Joseph R., Jr.: *See—*
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kamlade, William G., Jr.,3,629,413.
Komeno, Taichiro, to Shionogi & Co., Ltd.17β-1-Cycloalkenyl) oxy-2α,3α-epithio-5α androstanes. 3,629,240, Cl. 260-239.5
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nakazima, Takeaki. Process for making paper and air-pervious cardboard or boardlike structures predominantly of polytetrafluoroethylene. 3,629,383, Cl. 264-112.
Komlos, Endre: *See—*
Benko, Pal; Pallos, Laszlo; Vaczi, Lajos; Komlos, Endre; and Ordogh, Ferenc,3,629,334.
Komp, Joseph C., to Kendall Company, The. Apparatus for manufacturing adhesive tape products. 3,628,502, Cl. 118-261.

Komura, Seizo: *See—*
Otsuka, Masatomi; Komura, Seizo; and Yamaguchi, Hideo,3,629,249.
Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V.: *See—*
Marx, Arthur F.; and Kooreman, Hermanus J., 3,629,243.
Kooreman, Hermanus J.: *See—*
Marx, Arthur F.; and Kooreman, Hermanus J.,3,629,243.
Koppers Company, Inc.: *See—*
Easton, Rufus; and Botta, Jose A., Jr., 3,628,596.
Mitchell, Hartman, 3,628,595.
Reinfeld, Kurt; and Gouye, Emmanuel V., 3,628,594.
Silverblatt, Leo, 3,629,094.
Tucker, Linwood G., 3,628,676.
Korevaar, Geerlof Jan: *See—*
Greefkes, Johannes Anton; Riemens, Karl; Korevaar, Geerlof Jan; and Van Dijk, Leonardus Petrus Josef,3,629,619.
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich. Plastic antifriction material. 3,629,103, Cl. 252-12.
Kosaka, Kenzo: *See—*
Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunehiko,3,628,224.
Kostikov, Vladimir Grigorievich: *See—*
Kuznestsov, Rostislav Sergeevich; Uskach, Alexandr Grigorievich; and Kostikov, Vladimir Grigorievich,3,629,533.
Kotera, Katsumi: *See—*
Kitahonoki, Keizo; and Kotera, Katsumi,3,629,239.
Kothe, Erich, to Controls Company of America. Adjusting and calibrating of pressure switches. 3,628,782, Cl. 267-158.
Kottler, Franklin D.; and Leutung, Frederick K., to Eastman Kodak Company. Remote focusing override mechanism for an automatic focusing photographic projector. 3,628,863, Cl. 353-101.
Kotzsch, Hans-Joachim: *See—*
Buning, Robert; and Kotzsch, Hans-Joachim,3,629,214.
Kourimsky, Fritz, to AMP Incorporated, mesne. Folded box splice terminal. 3,629,794, Cl. 339-95.
Kowalenski, Rolf E.: *See—*
Lundgren, Kenneth P.; and Kowalenski, Rolf E.,3,629,761.
Koyanagi, Shunichi; Ogawa, Kinya; and Yamamoto, Akira, to Shinetsu Chemical Company. Compositions useful as enteric coatings and method for preparing acid phthalates of cellulose ethers for them. 3,629,237, Cl. 260-226.
Kozmin, Mikhail Ivanovich. Device for manufacturing pipes from glass metal. 3,628,938, Cl. 65-207.
Krakauer, Daniel, to Kay Manufacturing Corporation. Box spring structure. 3,628,201, Cl. 5-241.
Kramer, Walter E., to Zenith Radio Corporation. Method of activating lead glass microchannel plates. 3,628,933, Cl. 65-30.
Krasnov, Alexandr Petrovich: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.
Krause, Horst-Jurgen; and Dohr, Manfred, to Henkel & Cie G.m.b.H. Textile optical brighteners. 3,629,241, Cl. 260-239.9
Kremer, Charles J.; and Apikos, Dominic, to Atlantic Richfield Company. Wax compositions containing an ethylene- vinyl acetate copolymer, and organic acid and a butyl rubber. 3,629,171, Cl. 260-23.7
Krieger, Alex, to Societe de la Viscose Suisse. Poly (τ-amino carboxylic acid) compositions stabilized with a copper salts and iodoform. 3,629,188, Cl. 260-45.75
Kristensen, Knud, to Danfoss A/S. Electronic bistable semiconductor switching element and method of making same. 3,629,155, Cl. 252-512.
Kristofer Joakim Lehmkuhl: *See—*
Carlsson, Bengt Henry, 3,629,550.
Kroder, Ernest A.; and Glenn, John F., to Dentsply International Inc. Process for forming artificial implants. 3,628,248, Cl. 32-10.
Krug, Charles C. Method of applying hot-melt glue. 3,628,982, Cl. 117-38.
Kruis, John. Filler mouth. 3,628,577, Cl. 141-333.
Kubota, Kazuo: *See—*
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nakazima, Takeaki,3,629,383.
Kudlaty, Walter J., to Marvel Engineering Company. Filter anti-drain valve assembly. 3,628,662, Cl. 210-136.
Kudo, Mitsuhiro: *See—*
Kawabe, Ushio; Kudo, Mitsuhiro; Ishibashi, Masato; and Doi, Toshio,3,629,753.
Kuhl, Bernhard: *See—*
Hofmann, Dieter; Kuhl, Bernhard; and Rasch, Erhard,3,629,641.
Kuhle, Engelbert: *See—*
Frohberger, Paul-Ernst; Kuhle, Engelbert; and Urbschat, Otto Ewald,3,629,446.
Kuhlman, Norman H.: *See—*
Moore, Jesse C., 3,628,693.
Kuhnis, Hans Herbert; and Denss, Rolf, to Ciba-Geigy Corporation. Therapeutical compositions containing piperidine derivatives. 3,629,426, Cl. 424-267.
Kuilman, Han: *See—*
Zegers, Leo Eduard; Snijders, Wilfred Andre Maria; and Kuilman, Han,3,629,505.
Kulik, Metro D.: *See—*
Gorin, Everett; Struck, Robert T.; and Kulik, Metro D.,3,629,159.
Kulka, Kurt, to Fritzsche Dodge & Olcott Inc. Chloroformate and carbonate derivatives of substituted and unsubstituted 1-phenyl-2,2- dialkyl-1,3-dihydroxypropanes. 3,629,314, Cl. 260-463.
Kumazawa, Ryoji: *See—*
Kimura, Yoshiaki; Sano, Yoshiharu; Kumazawa, Ryoji; and Hisayasu, Yokohama,3,629,024.
Kummel, Joachim. Waste-heat boilers and like gas/liquid heat transfer systems. 3,628,508, Cl. 122-7.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Otani, Sugio, 3,629,379.
Kurihara, Masaru: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.
Kurioka, Tatsumi: *See—*
Terai, Kiyoshi; Kurioka, Tatsumi; Takeuchi, Hideshi; and Nakao, Zirou,3,628,338.
Kurlans, William H.: *See—*
Fraunfelder, James A.; Getz, Frank C., Jr.; Kauffman, Sidney L., Jr.; and Kurlans, William H.,3,629,837.
Kuroda, Minoru, to Nishizawa Shoji Co., Ltd. Method of making an adhesive applique article. 3,629,034, Cl. 156-219.
Kuroda, Minoru, 1/2 to Nishizawa Shoji Co., Ltd., and 1/2 to Pilgrim Industries, Inc. Method of forming applique designs. 3,629,035, Cl. 156-219.
Kuznestsov, Rostislav Sergeevich; Uskach, Alexandr Grigorievich; and Kostikov, Vladimir Grigorievich. Arc-quenching chamber. 3,629,533, Cl. 200-144.
Kwaitkowski, Gerald M.: *See—*
Redelman, Paul E.; and Kwaitkowski, Gerald M.,3,628,678.
Kwiatkowski, Gerald M.; and Redelman, Paul E., to Interlake Steel Corporation. Speed control device. 3,628,463, Cl. 104-152.
Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Uzu, Keizo; Nakano, Kinichi; and Takahashi, Toshinaka, 3,629,283.
Labeyrie, Antoine: *See—*
Flamand, Jean; Labeyrie, Antoine; and Picuchard, Guy,3,628,849.
Laboratories Om S.A.: *See—*
Esteve-Subirana, Antonio, 3,629,327.
La Branche, Harvey W.: *See—*
Edwards, Christopher J. C.; La Branche, Harvey W.; and Soulakis, George,3,628,725.
Soulakis, George; Baynes, William R.; and La Branche, Harvey W.,3,628,284.
Lach, Andrew. Cartridge tube loader. 3,628,273, Cl. 42-87.
La Chavd de-Fonds: *See—*
Polo, Raymond, 3,628,326.
Lafon, Louis, to Societe Anonyme dite: Orsymonde. Therapeutic composition containing a mandelamidine derivative. 3,629,443, Cl. 424-282.
Lagrone, Cecil G., Jr. Apparatus for indicating thermal and air velocity conditions of air in the plenum of a central air conditioning system. 3,628,346, Cl. 62-126.
Lajoie, Peter A., to Allegheny Ludlum Industries, Inc. Solid-state timing module. 3,629,664, Cl. 317-141.
Lake, William H., to General Electric Company. Voltage doubler starting circuit for discharge lamp. 3,629,647, Cl. 315-59.
Lalet, Philippe; and Miletto, Andre, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitane. Process for the preparation of modified polyvinyl chloride with high impact resistance. 3,629,369, Cl. 260-879.
Lamb, James J., to United States of America, Army. Meso-cavity specular integrator refractometer. 3,629,698, Cl. 324-58.5
Lambert, Frank. Automatic checkout counter. 3,628,632, Cl. 186-1.
Lambrecht, Anne. Toy animal tricycle. 3,628,801, Cl. 280-1.202
Lamoreaux, Harry F.; and Modic, Frank J., said Lamoreaux assor. to General Electric Company. Tough unsupported films formed from organopolysiloxanes. 3,629,358, Cl. 260-825.
Lampson, George P.; Field, Arthur K.; and Tytell, Alfred A., to Merck & Co., Inc. Process for isolating an interferon inducer and the product per se. 3,629,235, Cl. 260-211.5
Landry, Raymond William: *See—*
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William,3,629,385.
Langer, Alfred C.: *See—*
Reynolds, Frank L.; Langer, Alfred C.; and Tweedie, Ellsworth,3,629,786.
Langer, Arthur W., Jr.; and White, Herschel T., to Esso Research and Engineering Company. Preparation of linear olefin products. 3,629,355, Cl. 260-683.15
Langston, Zachary L. Nut cracking machine. 3,628,580, Cl. 146-12.
Lantz, Edward; and Davison, Harry W., to United States of America, National Aeronautics and Space Administration. Gaseous control system for nuclear reactors. 3,629,068, Cl. 176-86.

Laos, Ivar: *See—*
Baran, John S.; and Laos, Ivar,3,629,304.
Lareau, Armand R. Yardage indicator. 3,629,557, Cl. 235-95.
Largman, Theodore; and Newallis, Peter Edward, to Allied Chemical Corporation. N-(3,4-dichlorophenyl)-3-(N'-3,4- dichlorophenyl)carbamoyl methyl-2,2- dimethylcyclobutanecarboxamide chemosterilant. 3,629,459, Cl. 424-324.
La Rochelle, John H.: *See—*
Hahn, George A.; and La Rochelle, John H.,3,629,144.
Larralde, Edward; Weber, Ronald A.; Hanes, James W. E.; and Childers, Thomas W., to Esso Production Research Company. Removable pipe connector. 3,628,812, Cl. 285-24.
Larson, Roger V., to Bio-Logics, Inc. Transferring information. 3,628,722, Cl. 234-78.
Lassen, Niels: *See—*
Petersen, Povl V.; Lassen, Niels; and Hjortkjaer, Jes,3,629,444.
Latimer, Kenneth B.: *See—*
Means, John A.; Latimer, Kenneth B.; Moran, James; and Thoma, Paul J.,3,628,589.
Latos, Edwin J.: *See—*
McLarty, Jack Lowrie; Hayes, Charles M.; and Latos, Edwin J.,3,629,028.
Lattin, Leroy E.; and Byberg, Bjarne I., to Universal Products Corporation. Cable cutting pliers with guide loop. 3,628,247, Cl. 30-233.
Laudien, Helmut F.; and Smith, Eugene E., to United States Steel Corporation. Ultrasonic testing apparatus. 3,628,374, Cl. 73-67.8
Lausmann, Jerry S. Burner construction. 3,628,472, Cl. 110-7.
Lavander, Edward J., to Xerox Corporation. Grip force detection apparatus. 3,628,785, Cl. 271-46.
Lavender, William J., to Sherritt Gordon Mines Limited. Sampling device for multiple hearth furnace. 3,628,777, Cl. 263-26.
Lawrence, Joseph L.: *See—*
Puharih, Henry K.; and Lawrence, Joseph L.,3,629,521.
Lawrence, Ralph W., to Aerojet-General Corporation. Solid propellant composition containing polyesters and an inorganic oxide burning rate catalyst. 3,629,019, Cl. 149-19.
Lear Siegler, Inc.: *See—*
Christen, Roland W.; Guyeska, John C.; and Horstman, Gerald H., 3,629,684.
Lecher, Hans Z.; Braus, Harry; and Woltermann, Jay R., to National Distillers and Chemical Corporation. Tri(dialkylaminophenyl thioalkylene) phosphite stabilizer combinations. 3,629,141, Cl. 252-400.
Lechler, Rolf; and Leitermann, Wulf, to Audi NSU Auto Union Aktiengesellschaft, and Wankel GmbH. Circular piston combustion engine. 3,628,900, Cl. 418-88.
LECO, Inc.: *See—*
Phillips, William N., 3,628,731.
Lederer, Lester C. Harvesting header. 3,628,317, Cl. 56-219.
Ledex Inc.: *See—*
Anderson, Robert M., 3,629,745.
Giese, Clifford C., Jr., 3,629,525.
Lee, Harvy W., Jr.: *See—*
Cvacho, Daniel S.; Duss, John J., Jr.; and Lee, Harvy W., Jr.,3,628,368.
Lee, Henry L., Jr.; and Culp, Gordon W. Fluid connecting device. 3,628,813, Cl. 285-31.
Lee, Hsi Lin: *See—*
Grethe, Guenter; Lee, Hsi Lin; and Uskokovic, Milan Radoje,3,629,265.
Lee, Wilfred J., to Clarkson Industries, Inc. Rotary valved vacuum cleaning system outlet. 3,628,769, Cl. 251-149.9
Lee, William H. Drive and control system for electric automobiles. 3,628,621, Cl. 180-65.
Leech, Edward John: *See—*
Schneble, Frederick W., Jr.; Leech, Edward John; and McCormack, John Francis,3,629,185.
Leeds & Northrup Company: *See—*
Davis, Frederick B., 3rd; and Ross, Charles W., 3,629,562.
Leekley, Robert M.: *See—*
Murray, Margaret H.; and Leekley, Robert M.,3,628,962.
Leger, Lucien F.; and Lelong, Jose, to Glaverbel S.A. Coating method for strengthening vitreous and vitrocrystalline bodies. 3,628,983, Cl. 117-40.
Lehikoinen, Urho Albert, to Ethyl Corporation. Chemiluminescent smokes. 3,629,129, Cl. 252-188.3
Lehmann, Jean-Claude: *See—*
Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude,3,629,697.
Leibensperger, Robert Lee: *See—*
Cornish, Robert Franklin; and Leibensperger, Robert Lee,3,628,835.
Leitermann, Wulf: *See—*
Lechler, Rolf; and Leitermann, Wulf,3,628,900.
Leitner, Hermann J., to SIEMAG Siegener Maschinenbau GmbH. Rolling mill. 3,628,366, Cl. 72-249.
Leitz, Ernst, G.m.b.H.: *See—*
Leitz, Ernst, 3,628,873.
Leitz, Ludwig; and Franke, Willy, 3,628,434.
Loseries, Peter, 3,628,438.
Leitz, Ernst, to Leitz, Ernst, G.m.b.H. Method of continuously determining the degree of pollution of translucent liquids and apparatus therefor. 3,628,873, Cl. 356-208.
Leitz, Ludwig; and Franke, Willy, to Leitz, Ernst, G.m.b.H. Focal plane shutter for photographic camera. 3,628,434, Cl. 95-55.
Lelong, Jose: *See—*
Leger, Lucien F.; and Lelong, Jose,3,628,983.
Le Poole, Jan B., to U.S. Philips Corporation, mesne. Magnetic deflection system for electron analysis devices. 3,629,578, Cl. 250-49.5
Lescio, Benito: *See—*
Camosso, Domenico; and Lescio, Benito,3,628,838.
Lesikar, Johnie N., to Maxson Electronics Corporation. Locking device for driven bomb fuse. 3,628,459, Cl. 102-81.2
Leutung, Frederick K.: *See—*
Kottler, Franklin D.; and Leutung, Frederick K.,3,628,863.
Leuw, David; and Dror, Meir, to Israel, The State of. Implement for grasping small objects. 3,628,824, Cl. 294-99.
Levenback, George, to Linsey, Joseph M., Corporation. Hot food display unit. 3,628,447, Cl. 99-341.
Leventhal, Ruth Lee; and Gold, William R. Collapsible and disposable bed pan. 3,628,197, Cl. 4-113.
Lever Brothers Company: *See—*
Giles, Alan Frederick, 3,629,586.
Payne, Thomas Aquinas, Jr.; and Olson, Warren Eric, 3,629,125.
Peer, Hendricus Gerardus; and Van Den Ouweland, Godefridus Antonius Maria, 3,629,293.
Levin, Semen Zakharovich; and Shapiro, Aron Leibovich, to Vsesojuzny Nauchno-Issledovatelsky Institut Neftekhimicheskikh Protsessov. Process for the production of alkylene glycols. 3,629,343, Cl. 260-635.
Levitsky, Moses I.: *See—*
Wolf, Irving W.; Lienhard, Heinz; and Levitsky, Moses I.,3,629,388.
Levitsky, Rosanne A.: *See—*
Wolf, Irving W.; Lienhard, Heinz; and Levitsky, Moses I.,3,629,388.
Lewis, Anthony William: *See—*
Hough, Leslie; Turner, John Cameron; and Lewis, Anthony William,3,629,231.
Lewis, J Stephen: *See—*
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W.,3,628,282.
Lewis, Keith, to Lucas, Joseph, (Industries) Limited. Slider switch with improved detent means. 3,629,526, Cl. 200-16.
Lewis, Theras Gordon: *See—*
Dimmick, James Owen; Lewis, Theras Gordon; and O'Neill, John Francis,3,629,839.
Lichtblau, Ellis I.: *See—*
Schlichting, Hans L.; and Lichtblau, Ellis I.,3,629,339.
Liebe, Wolfgang; and Wendt, Maria Susanne, to Siemens Aktiengesellschaft. Electrical machine having salient rotor poles. 3,629,629, Cl. 310-59.
Lienhard, Heinz: *See—*
Wolf, Irving W.; Lienhard, Heinz; and Levitsky, Moses I.,3,629,388.
Liess, Richard K.; Ribbing, Donald E.; Stepe, Visvaldis A.; and Wilson, Eugene M., to Caterpillar Tractor Company. Mounting arrangement for bulldozer blades. 3,628,612, Cl. 172-805.
Liljendahl, Sven Algot Joel, to Aktiebolaget Electrolux. Valve structure for controlling discharge of waste liquid into pneumatic sewage disposal system. 3,628,194, Cl. 4-10.
Lilly, Eli, and Company: *See—*
Hamill, Robert L.; and Hoehn, Marvin M., 3,629,405.
Limberg, Allen Leroy, to RCA Corporation. Electronic processing apparatus. 3,629,611, Cl. 307-235.
Lincoln Manufacturing Company, Inc.: *See—*
MacKay, Robert H., 3,628,214.
Lindell, Courtney D.; and Locker, Hugh G., to Georgia-Pacific Corporation. Nozzle for dispersing viscous fluids. 3,628,734, Cl. 239-403.o
Lindelow, Claes-Goran: *See—*
Englund, Gosta R.; Mattsson, Mats E.; and Lindelow, Claes-Goran,3,629,563.
Lindsley, John Francis; and Sanborn, William Eugene, to American Cyanamid Company. Process for preparing alumina-coated silica catalyst material and the material so prepared. 3,629,152, Cl. 252-455.
Linkroum, Irving E., to Bendix Corporation, The. Pulse generating apparatus. 3,629,651, Cl. 315-227.
Linsey, Joseph M., Corporation: *See—*
Levenback, George, 3,628,447.
Lintchicum, Harley E.: *See—*
Bronne, William B.; and Lintchicum, Harley E.,3,628,246.
Lipe Rollway Corporation: *See—*
Armstrong, Jack W., 3,628,353.
Lipper, Harold A.: *See—*
Nakazawa, Yoshio; and Lipper, Harold A.,3,628,299.
Lippmann, Wilbur, to Ayerst, McKenna and Harrison Limited. Method of preventing excessive secretion of hydrochloric acid. 3,629,445, Cl. 424-285.
Litchfield, John H.; and Vely, Victor G., to Wrigley, Wm., Jr., Company. Phosphorus-containing anti-caries chewing gum compositions. 3,629,395, Cl. 424-48.
Littell, F. J., Machine Company: *See—*
Wiig, Chester M., 3,628,367.

Litton Systems, Inc.: *See—*
McConnell, Kenneth R., 3,629,496.
Livingston Irrigation & Chemical Co.: *See—*
Thomas, John R., 3,628,729.
Locker, Hugh G.: *See—*
Lindell, Courtney D.; and Locker, Hugh G.,3,628,734.
Lockhart, Ian Moyle, to Parke, Davis & Company. Chromanamines. 3,629,289, Cl. 260-345.2
Lockheed Aircraft Corporation: *See—*
Marmon, Frank E.; and Shimell, Alan B., 3,628,879.
Loeffler, Robert I.: *See—*
Bradbury, Harold M.; Loeffler, Robert I.; Lott, Jerry L.; and Thomas, Billy L.,3,628,343.
Lohse, Friedrich; Schmid, Rolf; and Batzer, Hans, to Ciba Limited. Curable compositions of matter. 3,629,226, Cl. 260-835.
Loliger, Willi; and Schmied, Rudolf, to Alpura AG. Diaphragm chamber damping device for damping fluid shocks in pipe systems. 3,628,573, Cl. 138-30.
Lombard, Claude, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Electromagnet ball-valves. 3,628,767, Cl. 251-139.
Longland, George M., Jr., to Standard Oil Company (Indiana). Integration of para-xylene oxidation to terephthalic acid and its esterification to dimethyl terephthalate. 3,629,321, Cl. 260-475.
Lonza Ltd.: *See—*
Volker, Theodor; and Hugener, Hanspeter, 3,629,203.
L'Oreal:*See—*
Kalopissis, Gregoire; and Manoussos, Georges, 3,629,452.
Loseries, Peter, to Leitz, Ernst, G.m.b.H. Swinging sector camera shutter. 3,628,438, Cl. 95-55.
Lott, Jerry L.: *See—*
Bradbury, Harold M.; Loeffler, Robert I.; Lott, Jerry L.; and Thomas, Billy L.,3,628,343.
Lotz, Winfried: *See—*
Muller, Jurgen; and Lotz, Winfried,3,628,252.
Louch, James B.: *See—*
Moore, Carl; and Louch, James B.,3,629,175.
Louis, Arnold S.; and Wormser, Hans H., to Markite Corporation. Rectilinear potentiometer. 3,629,779, Cl. 338-183.
Loupe, Richard H., to Altralite, Inc. Flywheel electrical generator. 3,629,632, Cl. 310-74.
Lovens Kemiske Fabrik Produktonsaktieselskab: *See—*
Godtfredsen, Wagn Ole, 3,629,300.
Loyer, Michael, to Johnson & Johnson. Domed tipped applictor for catamenil tampons. 3,628,533, Cl. 128-263.
Lozier, Walter W., 1/2 to White, Georganne C. Bit. 3,628,308, Cl. 54-8.
LTV Electrosystems, Inc.: *See—*
Johnson, Richard M., 3,628,756.
Lubart, Neil D.; and Vora, Madhukar B., to International Business Machines Corporation. Semiconductor resistor with uniform current distribution at its contact surface. 3,629,667, Cl. 317-234.
Lubrizol Corporation, The: *See—*
Gergel, William C.; Karn, Jack L.; and King, Laurence E., 3,629,109.
Lucas, Joseph, (Industries) Limited: *See—*
Birtwistle, Harold, 3,629,799.
Burton, Harold William; and Reynolds, Harry Herbert, 3,628,686.
Cotton, Herbert John Thomas; and Hemmings, Robert, 3,629,630.
Cryer, Edward, 3,629,524.
Drori, Moshe, 3,628,895.
Fry, William Lawrence, 3,629,527.
Hill, William Frank, 3,629,636.
Hill, William Frank, 3,629,817.
Hunt, John William Archibald; and Potter, Bernard Alan, 3,628,239.
Lewis, Keith, 3,629,526.
Russell, Edward Alan, 3,628,234.
Luck, James R., to Honeywell Inc. Free and combined cyanide measuring apparatus. 3,629,089, Cl. 204-195.
Luenser, Kurt K., to Verson Allsteel Press Company. Safety control circuit for presses and the like. 3,628,357, Cl. 72-6.
Luhrig, Hermann: *See—*
Taeffner, Klaus; and Luhrig, Hermann,3,628,745.
Lumley, Robert Miller: *See—*
Graham, Charles Eckner; Lumley, Robert Miller; and Oberholzer, David James,3,629,545.
Lummus, James L.; and Ryals, John N., to Pan American Petroleum Corporation. Preventing loss of drilling fluid to drilled formations. 3,629,102, Cl. 252-8.5
Lundberg, Robert Dean; Del Giudice, Frank Paul; and Kelso, Robert Gladden, to Union Carbide Corporation. Lactone/alkylene oxide copolymers as plasticizers for vinyl chloride resins. 3,629,374, Cl. 260-899.
Lundgren, Kenneth P.; and Kowalenski, Rolf E., to Motorola, Inc. Broadband high frequency transformer. 3,629,761, Cl. 336-192.
Lundstrom, Hans, to Allmanna Svenska Elektriska Aktiebolaget. Furnace for heat-treating objects under high pressure. 3,628,779, Cl. 266-5.
Lust, Sigmund: *See—*
Gante, Joachim; and Lust, Sigmund,3,629,270.
Lyerly, William M., to Du Pont de Nemours, E. I., and Company. Slurry explosive composition containing nitrogen- base salt and tnt, smokeless powder or composition. 3,629,021, Cl. 149-50.
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert, to International Business Machines Corporation. Apparatus for positioning and bonding. 3,628,717, Cl. 228-6.
Lynn, Charles L., Jr., 75% to Airco, Lynn, Inc., and 25% to Pearlman, Louis, Jr. Cargo handling system. 3,628,673, Cl. 214-1.
Lynn, John W.: *See—*
Brotherton, Thomas K.; and Lynn, John W.,3,629,200.
Lyons, Robert W.; Parmenter, Robert R.; and Semanick, James B., to Pullman Incorporated. Railroad box car and movable platform stops therefor. 3,628,466, Cl. 105-366.
M-E-M Controls, Inc.: *See—*
Butkus, Gediminas J., 3,629,663.
Machinenfabrik Augusburg-Nurnberg Aktiengesellschaft: *See—*
Kiwitz, Heinrich, 3,628,622.
Machleidt, Hans: *See—*
Eberlein, Wolfgang; Heider, Joachim; Machleidt, Hans; and Engelhardt, Gunther,3,629,234.
MacKay, Robert H., to Lincoln Manufacturing Company, Inc. Wheel or roller structure with brake. 3,628,214, Cl. 16-35.
MacLean, Alexander F.: *See—*
Stautzenberger, Adin L.; and MacLean, Alexander F.,3,629,328.
MacNeill, Samuel G.; and Eickelberg, Henry L., to Modern Equipment Company. Casting molds. 3,628,598, Cl. 164-309.
Maddox, Gregory A., to Cam-Stat Incorporated. Thermostat with heat anticipation and voltage regulation. 3,629,607, Cl. 307-117.
Maddox, Jim, Jr., to Texaco Inc. Water soluble corrosion inhibitors for well fluids. 3,629,104, Cl. 252-8.55
Magath, Joseph M. Aspiration and respiration apparatus. 3,628,532, Cl. 128-145.8
Magee, Ellington M.: *See—*
Geissler, Paul R.; and Magee, Ellington M.,3,628,940.
Magnatronic Controls, Inc.: *See—*
Rivers, Melvin, 3,628,811.
Magnusson, Ingemar Arnold; Marklund, Per Tage; Broddner, Sven Malte; Ax, Lars; and Andersson, Robert Bert. Rocket assisted projectile or gun boosted rocket with supported propellant grain. 3,628,457, Cl. 102-49.3
Maguire, John Anthony; and Rose, Francis Leslie, to Imperial Chemical Industries Limited. s-Triazola[4,3-a]pyrazine derivatives. 3,629,260, Cl. 260-250.
Maier, Alfred E.; Ricci, Louis N.; and Haugh, Charles E., to Westinghouse Electric Corporation. Motor operated circuit breaker. 3,629,744, Cl. 335-69.
Maille, Claude, to Stein Industries. Sewage mud sludge drying and incinerating installation. 3,628,473, Cl. 110-7.
Maisak, Melvin O.: *See—*
Fullington, William H.; and Maisak, Melvin O.,3,628,807.
Malacari, Natale Ercoli: *See—*
Cernia, Enrico; Rio, Arturo; Malacari, Natale Ercoli; and Mancini, Corrado,3,629,224.
Malek, Jack H.: *See—*
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W.,3,628,282.
Maletskos, Constantine J.; and Tang, Chung-Wai, to United States of America, Atomic Energy Commission. Process for separating specific radioelements singly or multiply, from a mixture of radioactive elements. 3,629,132, Cl. 252-301.1
Maloney, Thomas O.; and Pease, Donald L., to Xerox Corporation. Document handling apparatus. 3,628,786, Cl. 271-57.
Malz, Hugo; Grewe, Ferdinand; Dorken, August; and Kaspers, Helmut, to Farbenfabriken Bayer Aktiengesellschaft. Fungicidal methods and compositions comprising trichloroacetaldehyde aminals. 3,629,458, Cl. 424-324.
Mancini, Corrado: *See—*
Cernia, Enrico; Rio, Arturo; Malacari, Natale Ercoli; and Mancini, Corrado,3,629,224.
Mancini, Lawrence O.: *See—*
Yates, Vance J.; and Mancini, Lawrence O.,3,629,396.
Mancy, Denise: *See—*
Florent, Jean Edmond Marie; Mancy, Denise; and Verrier, Jean,3,629,404.
Mandel, Lewis R.; and Porter, Curt C., to Merck & Co., Inc. Method of inhibiting phenylethanslamine-N- methyltransferase. 3,629,475, Cl. 424-273.
Mandley, Donald J.: *See—*
Dega, Robert L.; and Mandley, Donald J.,3,628,376.
Mannes, Karl: *See—*
Schrader, Gerhard; Mannes, Karl; and Scheinpflug, Hans,3,629,411.
Manning's Inc.:*See—*
Brunner, Fred William, 3,628,602.
Manoussos, Georges: *See—*
Kalopissis, Gregoire; and Manoussos, Georges,3,629,452.
Manowitz, Milton; Walter, George R.; and Foris, Stephen A., to Givaudan Corporation. Preservatives for aqueous systems. 3,629,465, Cl. 424-349.
Marans, Nelson S.: *See—*
Jefferson, Donald E.; and Marans, Nelson S.,3,629,178.
Marbach, Edward P. Reference standard blood serum for the calibration of automatic blood serum analyzing apparatus. 3,629,142, Cl. 252-408.
Marconi Company Limited, The: *See—*
Mayhew, Antony James; and Cheale, Leonard Frederick, 3,629,543.

Marcus, Henry J.: *See—*
Gold, Marvin H.; and Marcus, Henry J.,3,629,440.
Maremont Corporation: *See—*
Harmon, Albert D., 3,628,320.
Mares, Jaromir: *See—*
Stol, Miroslav; Stoy, Vladimir; Kliment, Karel; Prokes, Milan; and Mares, Jaromir,3,628,988.
Mariani, Branko. Ullage opening spillage prevention system. 3,628,559, Cl. 137-202.
Marini, Manlio: *See—*
Franco, Simone; and Marini, Manlio,3,628,957.
Marino, Morris Anthony; Birkhaug, Frederic John; and Sadek, George Edward, to CPC International Inc. Refining process for crude glyceride oil. 3,629,307, Cl. 260-425.
Marionek, Erhard: *See—*
Erb, Herbert; Marionek, Erhard; and Steinbach, Walter,3,628,475.
Mark, Albert: *See—*
Glendinning, William B.; and Mark, Albert,3,629,016.
Markite Corporation: *See—*
Louis, Arnold S.; and Wormser, Hans H., 3,629,779.
Marklund, Per Tage: *See—*
Magnusson, Ingemar Arnold; Marklund, Per Tage; Broddner, Sven Malte; Ax, Lars; and Andersson, Robert Bert,3,628,457.
Marks, Alfred Finlay, to American Cyanamid Company. Antimicrobial solutions of dodecylguanidine hydrochloride having low temperature stability. 3,628,941, Cl. 71-67.
Marmon, Frank E.; and Shimell, Alan B., to Lockheed Aircraft Corporation. Jet pump. 3,628,879, Cl. 417-176.
Marroni, Michael A., Jr.; and Getchell, Douglas E., to United Aircraft Corporation. Pressure suit load relieved size adjustment joints. 3,628,189, Cl. 2-2.1
Marsh, Lynn W., Jr.; and Schneiderhan, Edward M., to Mohawk Data Sciences Corporation. Control for chain printer. 3,629,861, Cl. 340-172.5
Martin, Fred E., to Aerojet-General Corporation. Certain fluoro-containing nitro-acetal compounds. 3,629,338, Cl. 260-615.
Martin, Jack D. Machine tool. 3,628,403, Cl. 82-24.
Martin, Lynn P.: *See—*
Casey, Robert S.; and Martin, Lynn P.,3,628,876.
Martin, Philip C.: *See—*
Allen, Robert J.; Martin, Philip C.; and Urbonas, Vacys,3,628,698.
Martin, Robert E.: *See—*
Hider, Shibley A.; Kitaj, Walter; and Martin, Robert E.,3,628,985.
Martin, William A., to Eastman Kodak Company. Intermittent film-feeding mechanism. 3,628,711, Cl. 226-49.
Martin, William A., to Eastman Kodak Company. Strip material handling mechanism for use with non-rewind cartridges. 3,628,744, Cl. 242-55.21
Martin-Marietta Corporation: *See—*
McGowan, Gerald F., 3,629,617.
Whitlow, Billy W., 3,629,728.
Maruhama, Tetsuro: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi,3,629,707.
Maruyama, Kooichi: *See—*
Yamazaki, Eiichi; Maruyama, Kooichi; and Ogura, Iwao,3,628,850.
Marvel, Carl S.: *See—*
Szita, Jeno C.; and Marvel, Carl S.,3,629,479.
Marvel Engineering Company: *See—*
Kudlaty, Walter J., 3,628,662.
Marx, Arthur F.; and Kooreman, Hermanus J., to Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V.14α,17α-Methylenedioxypregnane derivatives. 3,629,243, Cl. 260-239.55
Marx, Frederick, Jr.: *See—*
Bjorn, James M.; and Marx, Frederick, Jr.,3,629,784.
Marx, Paul: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.
Maschinenfabrik Augsburg-Nurnberg AG: *See—*
Hartmann, Klaus, 3,628,766.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Fischer, Hans, 3,628,511.
Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See—*
Somora, Zdeno; Zavodsky, Ladislav; and Kalisky, Benedikt, 3,628,667.
Maschinenfabrik Carl Zanas Aktiengesellschaft: *See—*
Hagedorn, Leo, 3,628,495.
Massa, Dominick A., to Warwick Electronics Inc. Deflection yoke mounting. 3,629,751, Cl. 335-210.
Massar, Ernst, to Siemens Aktiengesellschaft. Current limiting device for limiting short-circuit current in energy transfer systems. 3,629,690, Cl. 323-9.
Massengill, S. E., Company, The: *See—*
Barr, Fred S.; Bullock, Charles F.; and Collins, Galen F., 3,629,454.
Masterson, Joseph B.: *See—*
Jachimowicz, Ludwik; and Masterson, Joseph B.,3,629,489.
Masuda, Isao, to Hoya Glass Works, Limited. Glass for laser. 3,629,137, Cl. 252-301.4
Masuda, Kohei; Uchigaki, Taku; and Arai, Masakazu, to Mitsubishi Petrochemical Co., Ltd. Process for production of laminated film having reduced neck-in-forming property. 3,629,037, Cl. 156-244.
Masuda, Toru; Saw, Yoichi; Kawakami, Yoshiyuki; and Miyano, Seiji, to Takeda Chemical Industries, Ltd. Salts of N-phenyl-N-(2-pyridylmethyl)-2-(N- piperidino)-ethylamine. 3,629,268, Cl. 260-294.
Mates, Constantine George; and Burkert, Herbert G., to Thomas & Betts Corporation. Method and apparatus for forming and applying terminals. 3,628,245, Cl. 29-628.
Mathers, James E.; Mikus, Felix F.; and Mehalchick, Emil J., to Sylvania Electric Products, Inc. Process for producing europium-activated yttrium vanadate phosphors. 3,629,131, Cl. 252-301.4
Mathey, Charles J., to Ford Motor Company. Master and remote switch circuit. 3,629,606, Cl. 307-114.
Matlock, Gordon E., to Brown Shoe Company, Inc. Cementing apparatus for work-pieces, such as shoes. 3,628,500, Cl. 118-3.
Matsuda, Ikuo: *See—*
Nakano, Tomoyasu; Matsuda, Ikuo; and Nishida, Jun,3,629,646.
Matsuda, Shozo: *See—*
Okada, Hideya; Matsuda, Shozo; and Ohbu, Misao,3,629,078.
Matsumoto, Seiji. Liquid toner development. 3,628,981, Cl. 117-37.
Matsushita Electric Industrial Co., Ltd.: *See—*
Haagensen, Duane Buford, 3,629,537.
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu, 3,629,011.
Matsushita Electric Industrial Company Limited: *See—*
Nakano, Tomoyasu; Matsuda, Ikuo; and Nishida, Jun, 3,629,646.
Shiga, Kazumasa, 3,629,724.
Matsushita Electronics Corporation: *See—*
Yokozawa, Masami; and Iwasa, Hitoo, 3,629,666.
Matsuura, Junichi: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Matsuura, Junichi; Hasuo, Masayoshi; and Kojima, Kazuhisa,3,629,216.
Matsuzawa, Kenji, to Nissan Jidosha Kabushiki Kaisha. Device for autmobiles for preventing air contamination. 3,628,328, Cl. 60-30.
Mattel, Inc.: *See—*
Baynes, William R.; Hiltpold, John P.; and Staats, William A., 3,629,680.
Edwards, Christopher J. C.; La Branche, Harvey W.; and Soulakis, George, 3,628,725.
Frederick, Phyllis; and Zimmerman, Charles R., 3,628,792.
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W., 3,628,282.
Mizoule, Henri, 3,628,283.
Soulakis, George; Baynes, William R.; and La Branche, Harvey W., 3,628,284.
Matthews, Raymond W., Jr. Parallel connected controlled rectifier switching circuit. 3,629,614, Cl. 307-252.
Mattsson, Mats E.: *See—*
Englund, Gosta R.; Mattsson, Mats E.; and Lindelow, Claes-Goran,3,629,563.
Mauler, Rudolf; and Gruschkau, Horst, to Behringwerke Aktiengesellschaft. Stable poliomyelitis vaccines. 3,629,399, Cl. 424-89.
Maurer, Herman J., to Case, J. I., Company. Transmission control mechanism. 3,628,395, Cl. 74-473.
Maxson Electronics Corporation: *See—*
Lesikar, Johnie N., 3,628,459.
Maycock, William Henry; and Chafer, Henry James, to Rotax Limited. Ignition systems. 3,629,652, Cl. 315-239.
Mayer, Endre A., to Bendix Corporation, The. Method and vortex regulating apparatus. 3,628,549, Cl. 137-13.
Mayer, Endre A.; and Frericks, Donald E., to Bendix Corporation, The. Confined jet amplifier having a receiver characterized by having a plurality of flow openings. 3,628,551, Cl. 137-81.5
Mayhew, Antony James; and Cheale, Leonard Frederick, to Marconi Company Limited, The. Soldering and unsoldering machines. 3,629,543, Cl. 219-85.
Maynard, George A.; and Briggs, Peleg B., Jr., to Textron Inc. Fastener feed mechanism. 3,628,715, Cl. 227-136.
Mazza, Lamberto, to Kantor International S.A. Machine for the production of aerated beverages from prefabricated cartridges containing flavoring substances. 3,628,444, Cl. 99-275.
McAlister, Charles G.: *See—*
Miller, Clarence O.; and McAlister, Charles G.,3,629,151.
McBride, John P.; McCorkle, Kenneth H.; and Pattison, William L., to United States of America, Atomic Energy Commission. Production of predominantly crystalline sol of urania. 3,629,133, Cl. 252-301.1
Mc Cabe-Powers Body Company: *See—*
Balogh, Roy, 3,628,675.
McCarthy, William C.; and De Lano, Merritt V., Jr., to Phillips Petroleum Company. Packed bed retainer. 3,628,314, Cl. 55-387.
McClellan, Hearst; and Cvacho, Daniel S., to Reynolds Metals Company. Apparatus for and method of shaping workpieces. 3,628,451, Cl. 101-4.
McClure, Bill M.; Berky, John J.; and Savage, George R., to United States of America, Army. Measuring instrument. 3,629,639, Cl. 33-143.
McClusky, Stanley A. Compact orienting and singulating system for irregular elongated objects such as potatoes. 3,628,648, Cl. 198-30.
McConnel, Christopher W.; and Slater, Robert W., to Atara Corporation. Sewage treating system. 3,628,775, Cl. 261-77.
McConnell, Kenneth R., to Litton Systems, Inc. Encoding of picture signals in photofacsimile. 3,629,496, Cl. 178-7.1

McCorkle, Kenneth H.: *See—*
McBride, John P.; McCorkle, Kenneth H.; and Pattison, William L.,3,629,133.

McCormack, John Francis: *See—*
Schneble, Frederick W., Jr.; Leech, Edward John; and McCormack, John Francis,3,629,185.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph,3,628,999.

Mc Cormick, Thomas M.: *See—*
Scarrott, Gordon George; and Mc Cormick, Thomas M.,3,629,830.

McCoy, Donald G.: *See—*
Puckett, Lawrence J.; Teague, Marion Warfield; and McCoy, Donald G.,3,628,347.

McCullough, John W.: *See—*
Cutaia, Alfred; McCullough, John W.; and Piller, Don W.,3,629,826.

McDonald , David W.; and Mortimer, George A., to Monsanto Company. Interpolymers of ethylene and acrylamides. 3,629,209, Cl. 260-80.73

McDonnell Douglas Corporation: *See—*
Roseland, Luther M., 3,629,182.

McDonough, Robert M.: *See—*
Berenbaum, Arthur; and McDonough, Robert M.,3,628,288.

McDuffee, Pauline M.: *See—*
McDuffee, Samuel E.; and McDuffee, Pauline M.,3,628,322.

McDuffee, Samuel E.; and McDuffee, Pauline M. Biblical timepiece. 3,628,322, Cl. 58-4.

McElroy, Stuart H. Mortar. 3,628,415, Cl. 89-1.

McFarand, James W., to Pfizer Inc. Method of treating helminthiasis. 3,629,423, Cl. 424-263.

McFarlan, Alden I. Air conditioning system and control including control method and means. 3,628,600, Cl. 165-22.

McFarland, James W.; and Ray, Verne A., to Pfizer & Co., Inc. Thiazoline and 5,6-dihydro-4H-1,3-thiazine antiviral agents. 3,629,247, Cl. 260-240.

McFeaters, Earl W.; and Donohue, James P., to National Cash Register Company, The. Carriage drive mechanism. 3,628,645, Cl. 197-90.

McGinnis, Patrick F.: *See—*
Carrico, John P.; and McGinnis, Patrick F.,3,629,573.

McGowan, Gerald F., to Martin-Marietta Corporation. Voltage controlled logarithmic attenuator. 3,629,617, Cl. 307-257.

McGowan, Joseph W.: *See—*
Carter, John L.; and McGowan, Joseph W.,3,629,735.

McGraw-Edison Company: *See—*
Henning, John, 3,628,443.

Mc Guire, Ray O.; and Peeper, Joseph C. Oil tank cleaning apparatus. 3,628,670, Cl. 210-528.

McKie, Thomas G., to Beloit Corporation. Curved foil above the fourdrinier wire. 3,629,057, Cl. 162-312.

McKillip, William J.; and Impola, Clarence N., to Ashland Oil, Inc. Bonding of rubber to fibrous reinforcers. 3,628,992, Cl. 117-76.

Mc Kinnis, Charles L.; and Cohen, Charles I., to Owens-Corning Fiberglas Corporation. Semipermeable membranes. 3,628,669, Cl. 210-510.

McLarty, Jack Lowrie; Hayes, Charles M.; and Latos, Edwin J., to Universal Oil Products Company. Method of making self lubricating filament wound tube. 3,629,028, Cl. 156-173.

McNeill, William, to United States of America, Army. Protective light image translating system. 3,629,591, Cl. 250-213.

McSherry, Frank D., Jr., to Raymond Lee Organization, Inc., The. No shock electric plug. 3,629,790, Cl. 339-42.

McVoy, David S., to Coaxial Scientific Corporation. Color television camera and method. 3,629,492, Cl. 178-5.4

Mc Wethy, Irvin E.; and Beck, Bjorn O., to Philco-Ford Corporation. Flexible check valves. 3,628,565, Cl. 175-525.3

Mead Corporation: *See—*
Van Brimer, Russell H., 3,629,593.

Mead Corporation, The: *See—*
Cahill, Lysle D., 3,629,495.

Meadors, Howard Clarence, Jr.: *See—*
Hirsch, Donald; and Meadors, Howard Clarence, Jr.,3,629,736.

Means, Gary L., to SCM Corporation. Motor speed control circuit. 3,629,677, Cl. 318-341.

Means, John A.; Latimer, Kenneth B.; Moran, James; and Thoma, Paul J., to Time Incorporated. Flow systems. 3,628,589, Cl. 162-336.

Meca Electronics, Inc.: *See—*
Davo, Ronald, 3,629,742.

Mecham, John L. Combination coaster and raft. 3,628,206, Cl. 9-11.

Mechanical Products: *See—*
Walling, Dean D., 3,629,762.
Walling Dean D.; and Rowan, Preston D., 3,629,763.

Meckel, Walter; and Muller, Erwin, to Farbenfabriken Bayer Aktiengesellschaft. Azoacyl compounds containing group. 3,629,227, Cl. 260-174.

Meeks, Albert D., to United States of America, Army Bicyce bake. Linear and angular velocity brake. 3,628,633, Cl. 188-1.

Mehalchick, Emil J.: *See—*
Mathers, James E.; Mikus, Felix F.; and Mehalchick, Emil J.,3,629,131.

Mehlhope, John F., to M P Pumps, Inc. Radially-compressed shaft sealing device. 3,628,798, Cl. 277-34.

Meier, Gerhard: *See—*
Kirschnek, Helmut; Hildebrand, Dietrich; Hendricks, Udo-Winfried; Meier, Gerhard; and Quaedvlieg, Mathieu,3,628,905.

Meier, Walter E.: *See—*
Boughton, Donald Clarke; and Meier, Walter E.,3,629,333.

Meiji Seika Kaisha, Ltd.: *See—*
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi, 3,629,428.

Meisler, Joseph; Van Baush, Edward Harold; and Banikiotes, Gregory Christ, to Hydrocarbon Research, Inc. Process for cryogenic purification of hydrogen. 3,628,340, Cl. 62-18.

Melamed, Nathan T.; Roland, George W.; and Hopkins, Richard H., to Westinghouse Electric Corporation. Calcium yttrium silicate oxyapatite laser material containing holmium and chromium ions. 3,629,136, Cl. 252-301.4

Melvin, Myron F.: *See—*
Frey, Cleon F.; and Melvin, Myron F.,3,629,764.

Melzer, Arnfried: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.

Menasha Corporation: *See—*
Stevens, Bruce W., 3,628,406.

Meng, Karl: *See—*
Horstmann, Harald; Wollweber, Hartmund; and Meng, Karl,3,629,442.

Menissier, Pierre: *See—*
Demaison, Paul; Menissier, Pierre; and Sionnet, Jean,3,629,067.

Merck & Co., Inc.: *See—*
Bachman, Paul L., 3,629,278.
Lampson, George P.; Field, Arthur K.; and Tytell, Alfred A., 3,629,235.
Mandel, Lewis R.; and Porter, Curt C., 3,629,475.
Saari, Walfred S., 3,629,285.
Silber, Robert H.; Kelley, Kane L.; and Trenner, Idamae G., 3,629,412.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Gante, Joachim; and Lust, Sigmund, 3,629,270.

Merlin Gerin, Societe Anonyme: *See—*
Bernard, Georges, 3,629,703.

Merrill, Bennett W., to American Standard Inc. Quiet wall. 3,628,626, Cl. 181-33.

Merrill, John F., to International Business Machines Corporation. Transmission line filter circuit. 3,629,740, Cl. 333-73.

Messrs. Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Morita, Kiyoshi; and Kawano, Shigemi, 3,628,425.

Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Euc, Ludwig; and Hack, Helmuth, to Farbenfabriken Bayer Aktiengesellschaft. Carboxylic acid (1,2,4-thiadiazol-5-yl)-amides. 3,629,275, Cl. 260-306.8

Metzner, Wolfgang; and Peilstocler. Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Ultraviolet-absorption agents for polycarbonates. 3,629,193, Cl. 260-45.85

Meyer, Karl-Otto: *See—*
Riebel, Aexander; Himmelmann, Wolfgang; Meyer, Karl-Otto; and Van Veelen, George Frans,3,628,961.

Meyer, Theodore N.: *See—*
Baldwin, William C.; and Meyer, Theodore N.,3,628,492.

Michaelsen, Randolph C. H., to Global Marine Inc. Hull cleaning brush. 3,628,489, Cl. 114-222.

Microcom Corporation: *See—*
West, Laurice J., 3,628,527.

Midland-Ross Corporation: *See—*
Acre, Sydney R., 3,628,422.

Midweso-Enterprise, Inc.: *See—*
Hallwood, Harry, 3,628,814.

Mierly, George M., Jr., to Westinghouse Electric Corporation. Method and apparatus for supporting an inner casing structure. 3,628,884, Cl. 415-219.

Mihailescu, Mihail: *See—*
Mocearov, Vladimir; Osomontanyi, Georgeta; and Mihailescu, Mihail,3,629,350.

Miklos, Louis F. Sheet metal cutting machine. 3,628,413, Cl. 83-513.

Mikus, Felix F.: *See—*
Mathers, James E.; Mikus, Felix F.; and Mehalchick, Emil J.,3,629,131.

Mikus, Leonard E.; and Harvey, William G., to Honeywell Information Systems Inc., mesne. Data transmission controller for central to remote system. 3,629,831, Cl. 340-152.

Miles Laboratories, Inc.: *See—*
Havera, Herbert John, 3,629,266.
Rodriguez, Rodolfo, 3,629,418.
Sawaya, Assad S.; and Stolar, Morris Emmanuel, 3,629,414.
Waterbury, Walter Edward; Barnes, Alice Cheryl; and Walchli, Herman Henry, Jr., 3,629,397.

Miletto, Andre: *See—*
Lalet, Philippe; and Miletto, Andre,3,629,369.

Miller, Albert R.; and Brooks, Douglass E., to Houghton, E. F., & Co. Accelerated curing system for depolymerized rubber. 3,629,173, Cl. 260-23.7

Miller, Clarence O.; and McAlister, Charles G., to Cities Service Company. Oxyhalogenation catalysts. 3,629,151, Cl. 252-443.

Miller, Max W., to Pfizer Inc. Use of 1-alkylsulfonylalkyl-2-alkyl-5-nitroimidazoles in controlling coccidiosis. 3,629,431, Cl. 424-273.

Miller, Max W., to Pfizer Inc. Use of 1-alkylsulfonylalkyl-2-alkyl-5-nitroimidazoles in controlling amebiasis. 3,629,434, Cl. 424-273.

Miller, Ralph L.: *See—*
Anderson, Frederick N.; and Miller, Ralph L.,3,629,510.

Miller, Robert G., to Caterpillar Tractor Company. Speed-programmed friction welder control. 3,628,330, Cl. 60-53.

Milliot, Henri: *See—*
Perrin, Jean-Louis; and Milliot, Henri,3,628,516.

Millmaster Onyx Corporation: *See—*
Wakeman, Reginald L.; Petrocci, Alfonso N.; and Prodo, Kenneth W., 3,629,462.

Milner, Maclin R., to Trimex Corporation. Combustion adjuvant. 3,628,925, Cl. 44-4.

Mims, James R.; and Derby, Palmer P., to Raytheon Company. Hand held series welding tool. 3,629,541, Cl. 219-78.

Minagawa, Motonobu; and Nakagawa, Kenichi, to Argus Chemical Corporation. Enhancement of resistance of olefin polymers to copper-catalyzed oxidative degradation. 3,629,189, Cl. 260-23.

Minamibata, Megumi: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo,3,628,219.

Minasy, Arthur J., to National Bank of North America, The, mesne. Label attachment. 3,628,267, Cl. 40-20.

Ministerul Industriel Chimice: *See—*
Mocearov, Vladimir; Osomontanyi, Georgeta; and Mihailescu, Mihail, 3,629,350.

Minnesota Mining and Manufacturing Company: *See—*
Harrington, Joseph Kenneth; and Trepka, Robert D., 3,629,332.
Mutsch, Edward L., 3,629,250.
Strehlow, Wolfgang H., 3,629,023.
Svendsen, John A., 3,629,549.
Wiese, Joseph A., Jr., 3,628,980.

Minoltacamera Kabushiki Kaisha: *See—*
Ogawa, Masay, 3,628,860.

Miranda, Victor Eduardo Vasquez, to Baxter Laboratories, Inc. Spectrophotometric test apparatus and method employing retroflective means. 3,628,872, Cl. 356-201.

Mischenko, Nicholas: *See—*
Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R.,3,628,753.

Mison, Andre: *See—*
Balitrand, Georges; Mison, Andre; Roget, Jean; and Tarbouriech, Philippe,3,629,217.

Misthos, George E.: *See—*
Bradbury, Wilburn F.; and Misthos, George E.,3,629,504.

Mitchell, Dennis; and Payne, Arthur Frank. Treatment of clays. 3,628,738, Cl. 241-16.

Mitchell, Edmund John: *See—*
Fordyce, William Fulmer; and Mitchell, Edmund John,3,629,721.

Mitchell, Emanuel M. Sorter device. 3,628,659, Cl. 209-126.

Mitchell, Hartman, to Koppers Company, Inc. Pivotally mounted starter bar in a continuous casting machine. 3,628,595, Cl. 164-274.

Mitchell Tackle, Inc.: *See—*
Mitchell, Wilbur A. E., 3,629,051.

Mitchell, Wilbur A. E., to Mitchell Tackle, Inc. Non-slip article of manufacture and process for making same. 3,629,051, Cl. 161-162.

Mitjans, Jose Figueras. Chair. 3,628,830, Cl. 297-218.

Mito, Akoo: *See—*
Koike, Kunio; Mito, Akoo; and Dezaki, Masayasu,3,628,674.

Mitsubishi Chemical Industries Limited: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Matsuura, Junichi; Hasuo, Masayoshi; and Kojima, Kazuhisa, 3,629,216.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kamada, Takayoshi; Nagai, Nobuo; and Tada, Shoji, 3,629,660.
Suzuki, Masataka, 3,629,538.

Mitsubishi Electric Corporation: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, 3,629,707.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Nishio, Yasuhiro; Ohmae, Takashi; Yoshida, Yasuyuki; and Oka, Tamotsu, 3,628,924.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Fukuda, Junichi; Tashiro, Kijuro; Sennari, Mutsuo; and Nagashima, Kenjiro, 3,629,368.
Masuda, Kohei; Uchigaki, Taku; and Arai, Masakazu, 3,629,037.

Mitsubishi Petrochemical Company Limited: *See—*
Onishi, Akiyoshi; and Fukuoka, Naohiko, 3,629,194.

Mitsubishi Rayon Co., Ltd.: *See—*
Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunehiko, 3,628,224.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Watanabe, Takeshi; Yoshida, Masatsugu; Akutagawa, Takaichi; and Noguchi, Shiro, 3,629,387.

Miura, Masashi: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.

Mixon, James Lenhart, Jr., to AMP Incorporated. Corona impeding connector device for high voltage utilities. 3,629,488, Cl. 174-73.

Miyano, Seiji: *See—*
Masuda, Toru; Saw, Yoichi; Kawakami, Yoshiyuki; and Miyano, Seiji,3,629,268.

Mizoule, Henri, to Mattel, Inc. Electronic control device sensitive to electrostatic charge for controlling electrically operated toys and the like. 3,628,283, Cl. 46-233.

Mizutani, Kazunori: *See—*
Yoshihara, Mitsuo; and Mizutani, Kazunori,3,629,204.

Moacanin, Jovan: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,629,161.

Moberg, William L.: *See—*
Frank, Robert I.; and Moberg, William L.,3,629,088.

Mobil Oil Corporation: *See—*
Driscoll, Patrick R., 3,629,429.
Driscoll, Patrick R., 3,629,472.
Pearce, David A., 3,629,436.

Mocearov, Vladimir; Osomontanyi, Georgeta; and Mihailescu, Mihail, to Ministerul Industriel Chimice. Process for obtaining diethylbenzene. 3,629,350, Cl. 260-672.

Mochizuki, Hiroshi: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.

Model, Ernst; and Bindler, Jakob, to Geigy Chemical Corporation. Halogenated diphenylether-containing compositions and control of pests therewith. 3,629,477, Cl. 424-340.

Modern Equipment Company: *See—*
MacNeill, Samuel G.; and Eickelberg, Henry L., 3,628,598.

Modic, Frank J.: *See—*
Lamoreaux, Harry F.; and Modic, Frank J.,3,629,358.

Mohawk Data Sciences Corporation: *See—*
Marsh, Lynn W., Jr.; and Schneiderhan, Edward M., 3,629,861.

Mohl, Steffen. Bogie structures, particularly for land vehicles. 3,628,808, Cl. 280-104.5

Molitoris, Stephen J., to American Safety Equipment Corporation of Michigan. Helmet neckguard. 3,628,190, Cl. 2-3.

Molnar, Richard, to Presto Lock Co., Inc. Luggage with slide fastener closure and slider therefor. 3,628,640, Cl. 190-412.

Monds, Fabian Charles: *See—*
Vincent, Samuel Anderson; Monds, Fabian Charles; and Armstrong, David Roger,3,628,538.

Monocraft, Inc.: *See—*
Chernow, Michael, 3,628,351.

Monsanto Company: *See—*
Armour, Donald F., 3,628,679.
Baker, Joseph W.; and Howe, Robert K., 3,629,448.
D'Amico, John J., 3,629,277.
D'Amico, John Joseph; and Mullins, Darrell Dexter, 3,629,208.
Edwards, James W., 3,629,380.
Fairing, John D., 3,629,114.
Fairing, John D., 3,629,120.
King, Thomas M., 3,629,124.
McDonald , David W.; and Mortimer, George A., 3,629,209.
Olin, John F., 3,629,447.
Shen, Chung Yu; and Stahlheber, Norman Earl, 3,629,329.
Tung, Ching C.; and Powers, Jack F., 3,628,946.
Walker, George E., 3,629,381.

Moody, Carl A. Hair teasing comb. 3,628,545, Cl. 132-11.

Moon, Malcolm W., to Upjohn Company, The. Bactericidal and fungicidal N-[(haloalkyl)thio] 1,2-pyridazine-carboximide compositions and methods of use. 3,629,419, Cl. 424-250.

Moore, Alvin G.; and Schuemann, Wilfred C., to Hercules Incorporated. Testing expedient for fluid jet deflection type instrument. 3,628,371, Cl. 73-1.

Moore, Bobby G. Method and apparatus for harvesting tobacco. 3,628,319, Cl. 56-27.5

Moore, Carl; and Louch, James B., to Dow Chemical Company, The. Method of preparing dispersions of carboxyl- containing polymers. 3,629,175, Cl. 260-29.6

Moore, Jesse C., 49% to Kuhlman, Norman H. Stacked pallet support and dispenser apparatus. 3,628,693, Cl. 221-223.

Moore, William H.; Richardson, George T.; and Pease, Floyd T., to Offshore Company, The. Drilling platform. 3,628,336, Cl. 61-46.5

Moran, James: *See—*
Means, John A.; Latimer, Kenneth B.; Moran, James; and Thoma, Paul J.,3,628,589.

Moreines, Harold: *See—*
Strole, John C.; Szerenyi, Laszlo I.; and Moreines, Harold,3,629,711.

Morgan, Edward R.: *See—*
Derham, James J.; and Morgan, Edward R.,3,628,663.

Morgenfruh, Rudolph A., to Hazeltine Corporation. Screening process simulation apparatus. 3,629,493, Cl. 178-6.

Morikawa, Kiyoshi; Echigoya, Etsuro; Shirasaki, Takayasu; and Furuoya, Itsuo, to Takeda Chemical Industries, Ltd. Method for preparing catalysts. 3,629,145, Cl. 252-432.

Morita, Katsuhiko, to Kabushiki Kaisha Daini Seikosha. Self-winding watch. 3,628,325, Cl. 58-82.

Morita, Kiyoshi; and Kawano, Shigemi, to Messrs. Mitsubishi Jukogyo Kabushiki Kaisha. Fluid motor-pump construction. 3,628,425, Cl. 91-491.

Morkoski, James, to International Harvester Company. Draft sensing means for tractor hitches. 3,628,610, Cl. 172-9.

Morris, Leo R., to Dow Chemical Company, The. Oxidative demethylation of methyl groups ortho to a strongly electronegative group on an aromatic ring. 3,629,344, Cl. 260-645.

Morris, Richard W.: *See—*
Carrell, Lelah A.; and Morris, Richard W.,3,628,271.

Morse, John E., to Eastman Kodak Company. Photographic apparatus for producing a temperproof identification card. 3,628,430, Cl. 95-1.1

Mortimer, George A.: *See—*
McDonald , David W.; and Mortimer, George A.,3,629,209.

Moskowitz, Paul M.: *See—*
Forier, Jean R.; and Moskowitz, Paul M.,3,629,771.
Fortier, Jean R.; and Moskowitz, Paul M.,3,629,770.

Motorola, Inc.: *See—*
Adlhoch, Richard H., 3,629,847.
Hessler, John, Jr., 3,629,729.
Lundgren, Kenneth P.; and Kowalenski, Rolf E., 3,629,761.
Riff, James A., 3,629,689.
Schafft, Hugo W., 3,629,625.
Terry, Lewis E., 3,629,022.
Thurnell, Orville D., 3,629,708.

Moulds, John W.; and Storey, Edwin C., to General Motors Corporation. Fuel supply system for an internal combustion engine providing timed cranking enrichment. 3,628,510, Cl. 123-32.

Mowbray, Dorian Farrar, to C.A.V. Limited. Liquid supply nozzles. 3,628,736, Cl. 239-533.

M P Pumps, Inc.: *See—*
Mehlhope, John F., 3,628,798.

Mudloff, Richard M. Sandbag and target apparatus in which the target also serves as a carrying case. 3,628,793, Cl. 273-105.

Mueller, James C.: *See—*
Jackson, Robert C.; Mueller, James C.; and Hardy, Edgar E.,3,628,453.

Mueller, Rolf K., to Bendix Corporation, The. Non-contacting method of measuring strain. 3,628,866, Cl. 356-32.

Muenchow, Herbert O., to United States of America, Atomic Energy Commission. Transfer machine for nuclear reactor. 3,629,062, Cl. 176-31.

Mulaskey, Bernard F., to Chevron Research Company. Hydrocarbon hydroconversion catalyst. 3,629,149, Cl. 252-439.

Mullen, Edward K.: *See—*
Carter, Leewood C.; and Mullen, Edward K.,3,629,033.

Muller, Erwin: *See—*
Meckel, Walter; and Muller, Erwin,3,629,227.

Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi, to Knapsack Aktiengesellschaft. Process for the manufacture of most finely pulverized red phosphorus. 3,628,739, Cl. 241-17.

Muller, Jurgen; and Lotz, Winfried, to Zuse KG. Drafting apparatus. 3,628,252, Cl. 33-32.

Muller, Marcel: *See—*
Furst, Andor; and Muller, Marcel,3,629,302.

Mullins, Darrell Dexter: *See—*
D'Amico, John Joseph; and Mullins, Darrell Dexter,3,629,208.

Mulready, Richard C.; and Creslein, William E., III, to United Aircraft Corporation. Roller bearing. 3,628,836, Cl. 308-184.

Multhaup, Ray D.: *See—*
Kester, Jack R.; Multhaup, Ray D.; Roberts, William R.; Townsend, Raymond L.; and Young, Kenneth A.,3,629,547.

Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., to Niagara Machine & Tool Works. Roll forming machine. 3,628,360, Cl. 72-169.

Munt, Irwin, to United States of America, mesne. Crossed grid EL display driver technique. 3,629,653, Cl. 315-169.

Murakami, Masahiro. Gyroscopic top device. 3,628,285, Cl. 46-243.

Murdock, Gordon A.: *See—*
Back, Sangho E.; and Murdock, Gordon A.,3,629,000.

Murne, Bertil Sven Oskar: *See—*
Haggard, Nils Olof; Murne, Bertil Sven Oskar; and Jakobsen, Kjell Mosvoll,3,628,688.

Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunchiko, to Mitsubishi Rayon Co., Ltd. Process and apparatus for continuously treating man-made filament tows under a normal condition. 3,628,224, Cl. 28-1.6

Murphy, Arthur J.: *See—*
Orzechowski, Walter J.; Pace, Herbert D.; Osterberg, Bruce H.; Caldwell, William W.; and Murphy, Arthur J.,3,629,556.

Murray, Margaret H.; and Leekley, Robert M., to Time, Incorporated. Photosensitive polyamide compositions. 3,628,962, Cl. 96-115.

Mutsch, Edward L., to Minnesota Mining and Manufacturing Company. Fungicidal benzothiadiazine-2,3-dioxides. 3,629,250, Cl. 260-243.

Myers, Lawrence A., to Chore-Time Equipment, Inc. Overhead winch construction. 3,628,505, Cl. 119-61.

Nagai, Nobuo: *See—*
Kamada, Takayoshi; Nagai, Nobuo; and Tada, Shoji,3,629,660.

Nagai, Shigeki: *See—*
Yamada, Keisho; Nagai, Shigeki; Odan, Kyoji; and Hidaka, Mikio,3,629,317.

Nagano, Yoshihiko; Yamaguchi, Kenichi; and Yamamoto, Tomohisa, to Nippon Kokan Kabushiki Kaisha. System for controlling the content of one fluid in another fluid. 3,628,555, Cl. 137-88.

Nagashima, Kenjiro: *See—*
Fukuda, Junichi; Tashiro, Kijuro; Sennari, Mutsuo; and Nagashima, Kenjiro,3,629,368.

Nagel, Horstmar: *See—*
Fries, Walter; Puchta, Rolf; Nagel, Horstmar; and Gundel, Wolfgang,3,629,126.

Nagler, Bruno, to Verti-Dynamics. Helicopter with shrouded rotor and air scoop confined within teardrop configuration of the fuselage. 3,628,755, Cl. 244-17.21

Naitou, Hideo, to Hitachi, Ltd. Electron probe specimen stage with a scattered electron detector mounted thereon. 3,629,579, Cl. 250-49.5

Nakabayashi, Masao: *See—*
Kodama, Yutaka; Kodama, Tsutomu; and Nakabayashi, Masao,3,629,378.

Nakagawa, Kenichi: *See—*
Minagawa, Motonobu; and Nakagawa, Kenichi,3,629,189.

Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, to Sumitomo Chemical Company, Ltd. 1:1 Alternating copolymers of substituted conjugated vinyl compounds and olefinic compounds and process for producing the same. 3,629,215, Cl. 260-85.5

Nakahara, Tsuneo: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi,3,629,707.

Nakamoto, Atsushi; Ogawa, Keizabuto; and Ukigaya, Tadashi, to Nikken Chemical Co., Ltd. Release-sustaining-tablet. 3,629,393, Cl. 424-22.

Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo, to Osaka Kiko Kabushiki Kaisha, and Chuwa Wool Industry Co., Ltd. Method and apparatus for forming a combed sliver. 3,628,219, Cl. 19-231.

Nakamura, Tunehiko: *See—*
Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunehiko,3,628,224.

Nakanishi, Ryoji: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.

Nakano, Kinichi: *See—*
Uzu, Keizo; Nakano, Kinichi; and Takahashi, Toshinaka,3,629,283.

Nakano, Tomoyasu; Matsuda, Ikuo; and Nishida, Jun, to Matsushita Electric Industrial Company Limited. Grid structure for cathode ray tube. 3,629,646, Cl. 315-31.

Nakao, Masaru: *See—*
Yamamoto, Hisao; and Nakao, Masaru,3,629,284.

Nakao, Zirou: *See—*
Terai, Kiyoshi; Kurioka, Tatsumi; Takeuchi, Hideshi; and Nakao, Zirou,3,628,338.

Nakata, Shinsaku; Hori, Hitoshi; Tagami, Kohei; and Suzuki, Masaru, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Pressure sensitive adhesive film. 3,628,987, Cl. 117-47.

Nakayama, Eddie U., to Phillips Petroleum Company. Molecular sieve adsorption and alkylation of ethylene and propylene. 3,629,356, Cl. 260-683.53

Nakazawa, Yoshio; and Lipper, Harold A. Architectural system of interior modular construction. 3,628,299, Cl. 52-488.

Nakazima, Takeaki: *See—*
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nakazima, Takeaki,3,629,383.

Nalco Chemical Company: *See—*
Vartiak, Joseph F., 3,628,942.
Vossos, Peter H., 3,629,139.

National Bank of North America, The: *See—*
Minasy, Arthur J., 3,628,267.

National Cash Register Company, The: *See—*
Bayless, Robert G.; Emrick, Donald D.; and Hart, Ronald L., 3,629,140.
Janning, John L., 3,629,654.
Johnson, Donn A., 3,629,822.
McFeaters, Earl W.; and Donohue, James P., 3,628,645.

National Distillers and Chemical Corporation: *See—*
Corbett, Herbert O., 3,628,561.
Lecher, Hans Z.; Braus, Harry; and Woltermann, Jay R., 3,629,141.
Quackenbush, John J., 3,629,389.

National Patent Development Corporation: *See—*
Vit, Jaroslav, 3,629,288.

National Research Development Corporation: *See—*
Vincent, Samuel Anderson; Monds, Fabian Charles; and Armstrong, David Roger, 3,628,538.

National Starch and Chemical Corporation: *See—*
Vilim, Robert P.; and Bell, Harvey, 3,628,969.

Natsarenus, Olga Svyatoslavovna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.

Nauck, Kurt Rudolph, Jr.: *See—*
Hatten, Jimmy L.; and Nauck, Kurt Rudolph, Jr.,3,629,316.

Nault, Larry George, to Struthers Scientific and International Corporation. Device for evaporative crystallization. 3,628,917, Cl. 23-273.

Nave, Richard L. Breath powered oscillator novelty. 3,628,280, Cl. 46-44.

Neail, William R.: *See—*
Cuthbert, Phillip W.; and Neail, William R.,3,629,487.

Neale, Ronald G., to Energy Conversion Devices, Inc. Film deposited circuits and devices therefor. 3,629,863, Cl. 340-173.

Nedelec, Lucien: *See—*
Bertin, Daniel; and Nedelec, Lucien,3,629,245.

Negrevergne, Georges. 3,5-Dioxo-1,2-diphenyl-4-n-butyl-4- polyoxyethylene pyrazolidines. 3,629,282, Cl. 260-310.

Neilson, William J., to Smith International, Inc. Drilling bit with integral stabilizer. 3,628,616, Cl. 175-375.

Neitzke, Nicholas R., to Weyerhaeuser Company. Reinforced pallet. 3,628,469, Cl. 108-56.

Nelson, Marvin L., to Aerojet-General Corporation. Method of making hollow compressor blades. 3,628,226, Cl. 29-156.8

Nelson, Paul E.: *See—*
Johnston, David L.; and Nelson, Paul E.,3,629,827.

Nelson, Richard G., to Atlas Chemical Industries, Inc. Sleeve connector and detonating assembly. 3,628,455, Cl. 102-27.

Nelson, Warren B. Apparatus and method for irrigation. 3,628,730, Cl. 239-189.

Nerwin, Hubert, to Eastman Kodak Company. Film magazine locating means. 3,628,435, Cl. 95-31.

Neu, Franklin D. Connection point locating apparatus. 3,628,497, Cl. 116-124.

Neuhaus, Clemens; Boehme, Klaus; and Gutermuth, Hermann, to Glanzstoff AG. Apparatus for coating woven or non-woven webs. 3,628,503, Cl. 118-410.

New Britain Machine Company, The: *See—*
Paulson, Donald C., 3,628,901.

Newallis, Peter Edward: *See—*
Largman, Theodore; and Newallis, Peter Edward,3,629,459.

Newallis, Peter E., to Allied Chemical Corporation. Cyclic urea amide phoshates useful as insecticides. 3,629,280, Cl. 260-309.7

Newborough, Harry, to Cessna Aircraft Company, The. Variable preferential flow control valve. 3,628,557, Cl. 137-116.3

Newman, Douglas A.; and Schlotzhauer, Allan T., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Transfer elements and method of making same. 3,628,979, Cl. 117-36.4

Newton, Eugene W. Floating contaminant constraining fence. 3,628,333, Cl. 61-1.

Newton, John D., to Internationa Business Machines Corporation. Data processing element. 3,629,853, Cl. 340-172.5

Niagara Machine & Tool Works: *See—*
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., 3,628,360.

Nibot Corporation: *See—*
Osrowsky, Efrem; Heffernan, Bart T.; and Best, Aaron R., 3,628,535.

Nichols, Herbert E.: *See—*
Sidenstick, James E.; Brown, Richard W.; Nichols, Herbert E.; and Burggraf, Frederick,3,628,885.

Nichols, Matthew, to Sauter Packaging Company. Apparatus for packaging medicinal tablets or the like. 3,628,694, Cl. 221-265.

Nichols, Richard A., to Parker-Hannifin Corporation. Fuel tank inerting system. 3,628,758, Cl. 244-135.

Nienaber, Frank H., to Television Laboratories, Inc. Deflection yoke. 3,629,750, Cl. 335-210.

Nieuwenhoven, Hendricus Jacobus Cornelis: *See—*
Van Der Lely, Cornelis; and Nieuwenhoven, Hendricus Jacobus Cornelis,3,628,390.

Nijhuis, Hendrik Johannes Antonius, to Tiger Plastics N.V. Industrieterrein. Light inhibiting ventilating device. 3,628,442, Cl. 98-121.

Nijkerk, Adolf Maurits, to Wiener & Co. N.V. Process and apparatus for producing chocolate. 3,628,965, Cl. 99-23.

Nikken Chemical Co., Ltd.: *See—*
Nakamoto, Atsushi; Ogawa, Keizabuto; and Ukigaya, Tadashi, 3,629,393.

Nilsson, Arne Lennart, to Aktiebolaget Electrolux. Centrifugal fan structure. 3,628,882, Cl. 415-119.

Nilsson, Nils Robert, to Instrument AB Scanditronix. Apparatus for providing a steep voltage step across a load in electric high voltage circuit. 3,629,605, Cl. 307-106.

Nino's Inc.:*See—*
Costarella, Nino F.; and Giuffre, Anthony A., 3,628,311.

Nippon Carbon Company, Limited: *See—*
Ishikawa, Toshikatsu; and Teranishi, Haruo, 3,628,984.

Nippon Chemical Works Co., Ltd.: *See—*
Tanaka, Toshiki, 3,629,246.

Nippon Denso Company Limited: *See—*
Sakurai, Yasuhiko, 3,629,820.

Nippon Denso Kabushiki Kaisha: *See—*
Sakurai, Michio; and Kawashima, Yoshichi, 3,629,623.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hashimoto, Osamu; and Kawai, Nobuyuki, 3,628,802.
Izuta, Tadao, 3,628,520.
Suzuki, Shoichi, 3,629,484.

Nippon Kogaku K.K.: *See—*
Sato, Akihiko, 3,628,436.
Watano, Yutaka, 3,629,776.

Nippon Kokan Kabushiki Kaisha: *See—*
Nagano, Yoshihiko; Yamaguchi, Kenichi; and Yamamoto, Tomohisa, 3,628,555.

Nippon Pulp Industry Co., Ltd.: *See—*
Takahashi, Shonosuke; and Tanaka, Mitsuo, 3,629,166.

Nippon Sheet Glass Co., Ltd.: *See—*
Inoue, Touru; and Tachibana, Masakiyo, 3,628,932.

Nippon Steel Corporation: *See—*
Okada, Hideya; Matsuda, Shozo; and Ohbu, Misao, 3,629,078.
Yonezawa, Toshiya; and Sumitomo, Hirokazu, 3,629,015.

Nishibata, Ken: *See—*
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi,3,629,428.

Nishida, Jun: *See—*
Nakano, Tomoyasu; Matsuda, Ikuo; and Nishida, Jun,3,629,646.

Nishida, Shinichi: *See—*
Sunano, Naomasa; and Nishida, Shinichi,3,629,671.

Nishimura, Masateru: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo,3,628,219.

Nishio, Yasuhiro; Ohmae, Takashi; Yoshida, Yasuyuki; and Oka, Tamotsu, to Mitsubishi Jukogyo Kabushiki Kaisha. Ta or Ta alloy clad steels. 3,628,924, Cl. 29-196.

Nishizawa Shoji Co., Ltd.: *See—*
Kuroda, Minoru, 3,629,034.
Kuroda, Minoru, 3,629,035.

Nissan Jidosha Kabushiki Kaisha: *See—*
Matsuzawa, Kenji, 3,628,328.

Nissan Motor Company, Limited: *See—*
Hirama, Teruo; and Yamamoto, Yukio, 3,629,818.

Nitto Electric Industrial Co., Ltd.: *See—*
Yoshihara, Mitsuo; and Mizutani, Kazunori, 3,629,204.

Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, to Wacker-Chemie G.m.b.H. Method for preparing organopolysiloxane elastomers. 3,629,359, Cl. 260-825.

Noguchi, Shiro: *See—*
Watanabe, Takeshi; Yoshida, Masatsugu; Akutagawa, Takaichi; and Noguchi, Shiro,3,629,387.

Nohe, Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Cyclohexane-1,2,3,4,5-pentacarboxylic acid and its dianhydride. 3,629,291, Cl. 260-346.3

Nohse, Lutz. Amphibian trailer. 3,628,203, Cl. 9-1.

Nolken, Ernst, to Farbwerke Hoechst Aktiengesellschaft Meister Lucius & Bruning. Epoxide resin cellular plastics and their manufacture. 3,629,163, Cl. 260-2.5

Nomarski, Georges, to Etablissement Public: Agence Nationale de Valorisation de la Recherche 'Anvar'. Variable phase contrast microscopy. 3,628,848, Cl. 350-13.

Nomura, Kikujiro: *See—*
Kobayashi, Akiyoshi; and Nomura, Kikujiro,3,628,293.

Nonn, Gerhard: *See—*
Ostwald, Fritz; and Nonn, Gerhard,3,628,571.

Norddeutsche Affinerie: *See—*
Hieke, Erhard, 3,628,707.

Normann, Richard W., to Bendix Corporation, The. Electrical connector. 3,629,791, Cl. 339-45.

North American Philips Company, Inc.: *See—*
Bisgaard, Jorgen Peter Christian Vilhelm, 3,629,717.

North American Rockwell Corporation: *See—*
Fujimoto, Ted Y., 3,629,618.
Ghormley, Edward L., 3,629,090.
Houk, Richard D., 3,628,393.
Rohrberg, Roderick G.; and Harvey, Don E., 3,628,236.

Northeast Electronics Corporation: *See—*
Bartelink, Everhard H. B., 3,629,696.

Norton, Allyn S., Jr.: *See—*
Fapiano, Donald J.; and Norton, Allyn S., Jr.,3,628,358.

Norton, John P., to American Air Filter Company, Inc. Fuel nozzle. 3,628,737, Cl. 239-426.

Nosler, Heinz Gunter; Bellinger, Horst; and Wessendorf, Richard, to Henkel & Cie G.m.b.H. Antimicrobic compositions synergistic antimicrobial compositions comprising certain aliphatic mono or di aldehydes and an aliphatic nitroalcohol. 3,629,464, Cl. 424-334.

Novelty Tool Company, Inc.: *See—*
Grise, Frederick G. J., 3,628,230.

Novitas Fabrik Elektrischer Apparate AG Zurich, Firma: *See—*
Hirzel, Hans, 3,629,528.

Noyes, Richard C.; and Andrews, Mena G., to United States of America, Atomic Energy Commission. Fuel subassembly for nuclear reactor. 3,629,061, Cl. 176-78.

Nozaki, Meguma, to Sumitomo Chemical Co., Ltd. Copolymers of styrene and process for preparation thereof. 3,629,211, Cl. 260-80.78

Noznick, Peter P.; and Tatter, Charles W., to Beatrice Foods Co. Spray dried whippable food composition. 3,628,968, Cl. 99-139.

Nuckolls, Joe A., to General Electric Company. High frequency lamp operating circuit. 3,629,683, Cl. 321-2.

Numaho, Yoshio: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.

Numerical Control Program Service, Inc.: *See—*
Graboyes, Herman, 3,628,417.

Nunn, Leslie G., Jr.: *See—*
Schenck, Leslie M.; and Nunn, Leslie G., Jr.,3,629,377.

N.V. 'COQ': *See—*
Frowein, Egbertus Adrianus, 3,629,661.

N.V. Ingenieursbureau voor Systemen en Octrooien 'Spanstaal':*See*—
Van Der Veen, Romke, 3,628,263.
Oak Electro/Netics Corporation: *See*—
Walding, Eugene C., 3,629,722.
Oberholzer, David James: *See*—
Graham, Charles Eckner; Lumley, Robert Miller; and Oberholzer, David James,3,629,545.
Obraztsov, Alexei Ivanovich: *See*—
Kharinskaya, Marina Anatolievna; and Obraztsov, Alexei Ivanovich,3,629,157.
O'Callaghan, Gerald F., to Eaton Yale & Towne, Inc. Controlled-velocity drive control. 3,629,633, Cl. 310-94.
O'Connor, Francis M.:*See*—
Bailey, Donald L.; and O'Connor, Francis M.,3,629,310.
Odan, Kyoji: *See*—
Yamada, Keisho; Nagai, Shigeki; Odan, Kyoji; and Hidaka, Mikio,3,629,317.
O'Drobinak, John D.:*See*—
Kaufman, Martin H.; and O'Drobinak, John D.,3,629,020.
Oertle, Donald H.; and Radd, Frederick J., to Continental Oil Company. Process for inhibiting hydrogen permeation of steel in ammonia service. 3,628,912, Cl. 21-2.5
Offenwanger, Josef, to Signode Corporation. Frame nailing machine. 3,628,714, Cl. 227-7.
Offshore Company, The: *See*—
Moore, William H.; Richardson, George T.; and Pease, Floyd T., 3,628,336.
Ogata, Fuminaro: *See*—
Kimura, Isao; and Ogata, Fuminaro,3,629,053.
Ogawa, Keizabuto: *See*—
Nakamoto, Atsushi; Ogawa, Keizabuto; and Ukigaya, Tadashi,3,629,393.
Ogawa, Kinya: *See*—
Koyanagi, Shunichi; Ogawa, Kinya; and Yamamoto, Akira,3,629,237.
Ogawa, Masay, to Minoltacamera Kabushiki Kaisha. Heat-fusing apparatus in electosatic copier. 3,628,860, Cl. 355-10.
Ogimachi, Naomi N.: *See*—
Frankel, Milton B.; and Ogimachi, Naomi N.,3,629,324.
Ogura, Iwao: *See*—
Yamazaki, Eiichi; Maruyama, Kooichi; and Ogura, Iwao,3,628,850.
O'Hara, Kim L.:*See*—
Beals, Charles D.; Fitzpatrick, George I.; and O'Hara, Kim L.,3,628,918.
Ohbu, Misao: *See*—
Okada, Hideya; Matsuda, Shozo; and Ohbu, Misao,3,629,078.
Ohmae, Takashi: *See*—
Nishio, Yasuhiro; Ohmae, Takashi; Yoshida, Yasuyuki; and Oka, Tamotsu,3,628,924.
Ojima, Takashi: *See*—
Katsuya, Noboru; Sagara, Takaaki; Takahashi, Reiji; and Ojima, Takashi,3,628,966.
Oka, Hidehiko: *See*—
Takahi, Yukiyoshi; Tomita, Kazuo; and Oka, Hidehiko,3,629,430.
Oka, Tamotsu: *See*—
Nishio, Yasuhiro; Ohmae, Takashi; Yoshida, Yasuyuki; and Oka, Tamotsu,3,628,924.
Okada, Hideya; Matsuda, Shozo; and Ohbu, Misao, to Nippon Steel Corporation. Method for surface treatment of zinc-plated sheet steel. 3,629,078, Cl. 204-35.
Okazaki, Masahiko: *See*—
Kawamura, Shigeo; Hirano, Takayoshi; Takamura, Shuichi; and Okazaki, Masahiko,3,629,306.
Okubo, Teruo, to Eisai Kabushiki Kaisha. Evaluation of sterilizing power of disinfectants against hog cholera virus. 3,629,074, Cl. 195-103.5
Okuno, Zenjiro, to Kabushiki Kaisha Ricoh. Liquid developer for electrophotography. 3,629,117, Cl. 252-62.1
Olcott, Eugene L., to Susquehanna Corporation, The. Shaped pyrolytic graphite articles. 3,629,049, Cl. 161-60.
O'Leary, Paul C. Lubricator device. 3,628,631, Cl. 184-55.
Olin Corporation: *See*—
Cramer, Henry R., 3,629,111.
Olin, John F., to Monsanto Company. Scab fungus control. 3,629,447, Cl. 424-300.
Olive, Martin Frederick; and Dovey, Geoffrey, to British Petroleum Company Limited, The. Catalytic rearrangement of alkyl aromatics. 3,629,351, Cl. 260-672.
Oliver, Gene L., to Eastman Kodak Company. Merocyanine dyes and photographic materials prepared therewith. 3,629,274, Cl. 260-304.
Olson, Carl R.: *See*—
Hartlein, Robert C.; and Olson, Carl R.,3,629,228.
Olson, Warren Eric: *See*—
Payne, Thomas Aquinas, Jr.; and Olson, Warren Eric,3,629,125.
Olympia Werke AG: *See*—
Sobottka, Dieter; and Folkens, Dieter, 3,629,754.
Olympus Optical Company Limited: *See*—
Hayamizu, Yoshisada, 3,628,870.
O'Neil Duro Company:*See*—
Hoffmann, Gilbert F., 3,629,177.
O'Neil, Kevin B.; Fraser, Cameron R.; and Helms, Paul E., Jr., to Goodrich Tire & Rubber Company, The. Bias-belted tire. 3,628,587, Cl. 152-361.
O'Neill, John Francis:*See*—
Dimmick, James Owen; Lewis, Theras Gordon; and O'Neill, John Francis,3,629,839.
Onishi, Akira; Fujio, Ryota; Kojima, Minoru; and Kawamoto, Hiroshi, to Bridgestone Tire Company Limited. Method of preparing conjugated diene polymers by using organolithium barium-containing compound catalyst system. 3,629,213, Cl. 260-82.1
Onishi, Akiyoshi; and Fukuoka, Naohiko, to Mitsubishi Petrochemical Company Limited, and Shipro Kasci Kaisha Limited. Polyolefins stabilized with mercapto acid esters. 3,629,194, Cl. 260-45.85
Optical Sciences Group, Incorporated: *See*—
Jampolsky, Arthur, 3,628,854.
Ordogh, Ferenc: *See*—
Benko, Pal; Pallos, Laszlo; Vaczi, Lajos; Komlos, Endre; and Ordogh, Ferenc,3,629,334.
Ordower, Robert, to International Business Machines Corporation. Character recognition circuitry. 3,629,829, Cl. 340-146.3
O'Reilly, Anthony E.; and Hong, Charles A., to Procter & Gamble Company, The. Stabilized amylase compositions. 3,629,123, Cl. 252-89.
Orstam, Preben E. R., to Skandinavisk Emballage Aktieselskab. Device for continuously operating band conveyers. 3,628,652, Cl. 198-34.
Ort, Wolfgang: *See*—
Brauning, Gerhard; and Ort, Wolfgang,3,628,751.
Ort, Wolfgang; and Brauning, Gerhard, to Eastman Kodak Company. Automatic film threading device. 3,628,749, Cl. 242-186.
Ortho Pharmaceutical Corporation: *See*—
Karmas, George, 3,629,269.
Shroff, Arvin P., 3,629,415.
Orzechowski, Walter J.; Pace, Herbert D.; Osterberg, Bruce H.; Caldwell, William W.; and Murphy, Arthur J., to Western Data Products, Inc. Card-reading mechanism. 3,629,556, Cl. 235-61.11
Osaka Kiko Kabushiki Kaisha: *See*—
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo, 3,628,219.
Osborn, Peter E.: *See*—
Clark, William R.; Hare, George H.; and Osborn, Peter E.,3,629,850.
Osomontanyi, Georgeta: *See*—
Mocearov, Vladimir; Osomontanyi, Georgeta; and Mihailescu, Mihail,3,629,350.
Osrowsky, Efrem; Heffernan, Bart T.; and Best, Aaron R., said Best and said Ostrowsky assors. to Nibot Corporation. Surgical instrument for implanting a prosthetic heart valve or the like. 3,628,535, Cl. 128-303.
Osterberg, Bruce H.: *See*—
Orzechowski, Walter J.; Pace, Herbert D.; Osterberg, Bruce H.; Caldwell, William W.; and Murphy, Arthur J.,3,629,556.
Ostrowski, David S.: *See*—
Polanyi, Michael L.; and Ostrowski, David S.,3,628,525.
Ostwald, Fritz; and Nonn, Gerhard, to International Telephone and Telegraph Corporation. Valve. 3,628,571, Cl. 137-627.5
Otani, Sugio, to Kurcha Kagaku Kogyo Kabushiki Kaisha. Production of carbon filaments from low- priced pitches. 3,629,379, Cl. 264-29.
Otis Engineering Corporation: *See*—
Bostock, James H., 3,628,822.
Otsuka Kogaku Yakuhin Kabushiki Kaisha: *See*—
Otsuka, Masatomi; Komura, Seizo; and Yamaguchi, Hideo, 3,629,249.
Otsuka, Masatomi; Komura, Seizo; and Yamaguchi, Hideo, to Otsuka Kogaku Yakuhin Kabushiki Kaisha. Diaminoalkyl-S-dihydrotetrazines. 3,629,249, Cl. 260-241.
Ott, Karl-Heinz; Schuster, Herbert; Dinges, Karl; and Rohr, Harry, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of thermoplastic- elastic moulding compositions of high impact and notched impact strength. 3,629,370, Cl. 260-880.
Otten, Leonard E.: *See*—
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert,3,628,717.
Otto, Dennis L., to Timken Company, The. Bearing assembly having flexible labyrinth enclosures. 3,628,837, Cl. 308-187.
Outboard Marine Corporation: *See*—
Quiram, Ronald G.; and Borst, Gaylord M., 3,628,196.
Ziegler, Kurt F., 3,628,237.
Over, William Roderick: *See*—
Brown, Christopher Kingsley; and Over, William Roderick,3,628,202.
Owen, Dave L., to Grace, W. R., & Co. Vacuum nozzle device. 3,628,576, Cl. 141-65.
Owen, Ronald C.; and Jurin, Robert J., to Illinois Tool Works Inc. Method and apparatus for applying carriers onto containers. 3,628,305, Cl. 53-35.
Owen, William S.: *See*—
Czarnikow, George K.; and Owen, William S.,3,628,440.
Owens-Corning Fiberglas Corporation: *See*—
Isham, Allan B.; and Shenk, Wilbur, III, 3,629,026.
Mc Kinnis, Charles L.; and Cohen, Charles I., 3,628,669.
Russell, Robert G., 3,628,931.
Shannon, Richard F., 3,628,572.
Owens-Illinois, Inc.: *See*—
Hider, Shibley A.; Kitaj, Walter; and Martin, Robert E., 3,628,985.

Oxenrider, Bryce C.: *See—*
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril,3,629,255.
Oy Wartsila AB: *See—*
Gahmberg, Gustaf; and Peltonen, Reijo Olavi, 3,629,099.
Pace, Henry A., to Goodyear Tire & Rubber Company, The. Pneumatic tire containing a sealant. 3,628,585, Cl. 152-347.
Pace, Herbert D.: *See—*
Orzechowski, Walter J.; Pace, Herbert D.; Osterberg, Bruce H.; Caldwell, William W.; and Murphy, Arthur J.,3,629,556.
Pacesetter Products Inc.: *See—*
Weinstein, Aaron; and Scourtas, Frank, 3,629,050.
Pack-Rite Packaging & Crating Co., Inc.: *See—*
Angelbeck, John A., Jr., 3,628,468.
Paddison, Eric; and Simpson, Michael Charles Stephen, to English Electric Company Limited, The. D.C. assisted power supply. 3,629,657, Cl. 317-33.
Padgett, Edwin. Electric plaster finishing trowel. 3,628,210, Cl. 15-3.
Pagani, Giancarlo: *See—*
Soardi, Italo; and Pagani, Giancarlo,3,629,497.
Pagano, Dominick A. Apparatus for ultrasonic inspection of a length of test material. 3,628,375, Cl. 73-71.5
Page, Gerald A.; and Page, James E. Vehicle box cover. 3,628,828, Cl. 296-137.
Page, James E.: *See—*
Page, Gerald A.; and Page, James E.,3,628,828.
Paglione, Robert Wayne: *See—*
Siekanowicz, Wieslaw Wojciech; and Paglione, Robert Wayne,3,629,734.
Palen, Richard L., to Clark Equipment Company. Latching mechanism. 3,628,222, Cl. 24-201.
Pallini, Ugo: *See—*
Bernardi, Luigi; and Pallini, Ugo,3,629,305.
Pallos, Laszlo: *See—*
Benko, Pal; Pallos, Laszlo; Vaczi, Lajos; Komlos, Endre; and Ordogh, Ferenc,3,629,334.
Palmer, Charles E. Recloseable package member. 3,628,721, Cl. 229-87.
Palmer, Frank W.; and Aepli, Otto T., to BASF Wyandotte Corporation. Low foaming rinse additive. 3,629,127, Cl. 252-161.
Pan American Petroleum Corporation: *See—*
Lummus, James L.; and Ryals, John N., 3,629,102.
Pancook, James J., to Houdaille Industries, Inc. Machine tool having tool loader and unloader. 3,628,231, Cl. 29-243.
Pande, Kailash C., to Dow Chemical Company, The. Tricyclohexyltin 8-quinolinolates. 3,629,264, Cl. 260-270.
Panelfold Doors, Inc.: *See—*
Dixon, Guy E., 3,628,588.
Pankratov, Vyacheslav Alexandrovich: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.
Parent, Leon G., to CIREB S.A. Device for connecting various floors of a construction located at different levels. 3,628,209, Cl. 14-71.
Parish, Clyde E.: *See—*
Anderson, John E.; Parish, Clyde E.; and Ross, George H.,3,629,311.
Parke, Davis & Company: *See—*
Lockhart, Ian Moyle, 3,629,289.
Parker Industries, Inc.: *See—*
Gordon, Richard J., 3,628,685.
Parker Pen Company, The: *See—*
Hill, Franklin J., 3,628,921.
Parker, Robert W. Method of making a military blank cartridge. 3,628,225, Cl. 29-1.3
Parker-Hannifin Corporation: *See—*
Nichols, Richard A., 3,628,758.
Parks-Cramer (Great Britain) Limited: *See—*
Broadbent, Arnold, 3,628,313.
Parmenter, Robert R.: *See—*
Lyons, Robert W.; Parmenter, Robert R.; and Semanick, James B.,3,628,466.
Parsons, Charles G.: *See—*
Horvath, Roland J.; and Parsons, Charles G.,3,629,408.
Pasbrig, Max. Device for clamping and tightening cables and the like. 3,628,221, Cl. 24-126.
Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH: *See—*
Hofmann, Dieter; Kuhl, Bernhard; and Rasch, Erhard, 3,629,641.
Pater, Anton S.: *See—*
Bailey, Donald L.; and Pater, Anton S.,3,629,308.
Patrick and Drew Limited: *See—*
Patrick, Michael Alfred; and Brittain, Derek John, 3,629,650.
Patrick, Michael Alfred; and Brittain, Derek John, to Patrick and Drew Limited. Method and apparatus for operatin g a gas discharge tube. 3,629,650, Cl. 315-177.
Pattison, William L.: *See—*
McBride, John P.; McCorkle, Kenneth H.; and Pattison, William L.,3,629,133.
Paulsboro Chemical Industries, Inc.: *See—*
Curtiss, Philip F., 3,628,295.
Paulson, Donald C., to New Britain Machine Company, The. Means for monitoring product quality in a plastics injection-molding machine. 3,628,901, Cl. 18-30.
Paulson, Gerald L., to Beckman Instruments, Inc. Light-tight sample introduction system. 3,628,682, Cl. 220-20.5
Pauwels, Edward M.; Ritsema, Irving M.; and Suttle, Ward C., to Bendix Corporation, The. Wheel speed sensor for an adaptive braking system. 3,629,635, Cl. 310-168.
Pauza, William Vito, to AMP Incorporated. Method of making power frame for integrated circuit. 3,628,483, Cl. 113-119.
Payne, Arthur Frank: *See—*
Mitchell, Dennis; and Payne, Arthur Frank,3,628,738.
Payne, Thomas Aquinas, Jr.; and Olson, Warren Eric, to Lever Brothers Company. Liquid detergent compositions. 3,629,125, Cl. 252-135.
Payot, Pierre H., to Ciba-Geigy Corporation. Spasmolytic compositions and the use thereof with N-(alkanoylphenoxyalkyl)-N,N,N-trialky ammonium salts. 3,629,461, Cl. 424-329.
Peacock, Carl R., to Phillips Petroleum Company. Container-forming machine. 3,628,428, Cl. 93-39.2
Pearce, David A., to Mobil Oil Corporation. Concentrated carbamate pesticide wettable powder formulations. 3,629,436, Cl. 424-275.
Pearce, Henry A., Jr., to Westinghouse Electric Corporation. Transformer using non-combustible fluid dielectric for cooling. 3,629,758, Cl. 336-57.
Pearlman, Louis, Jr.: *See—*
Lynn, Charles L., Jr., 3,628,673.
Pearson, Melvin A.: *See—*
Schlemmer, Alfred H.; and Pearson, Melvin A.,3,628,258.
Pease, Donald L.: *See—*
Maloney, Thomas O.; and Pease, Donald L.,3,628,786.
Pease, Floyd T.: *See—*
Moore, William H.; Richardson, George T.; and Pease, Floyd T.,3,628,336.
Pedersen, Richard Alan; Reed, Ray Allen; and Underwood, Milton Dean, to Bell Telephone Laboratories, Incorporated. TTL input array with bypass diode. 3,629,609, Cl. 307-203.
Peek, Vernon E., to Anderson Electric Corporation. Hot line clamp. 3,629,805, Cl. 339-109.
Peeper, Joseph C.: *See—*
Mc Guire, Ray O.; and Peeper, Joseph C.,3,628,670.
Peer, Hendricus Gerardus; and Van Den Ouweland, Godefridus Antonius Maria, to Lever Brothers Company. Synthesis of 5-methyl-4-hydroxy-2,3- dihydrofuran-3-one. 3,629,293, Cl. 260-347.8
Peilstocler. Gunter: *See—*
Metzner, Wolfgang; and Peilstocler. Gunter,3,629,193.
Pellegrini, John P., Jr.; and Strange, Harold O., to Gulf Research & Development Company. Controlling soil-dwelling fungi with phenarsazine compounds. 3,629,476, Cl. 424-297.
Peltonen, Reijo Olavi: *See—*
Gahmberg, Gustaf; and Peltonen, Reijo Olavi,3,629,099.
Pendleton Tool Industries, Inc.: *See—*
Wynne, Donald T.; Workman, David E.; and Kneier, Joseph W., 3,628,843.
Pennsalt Chemicals Corporation: *See—*
Smith, Herbert Q., 3,629,427.
Pennwalt Corporation: *See—*
Sanchez, Jose, 3,629,220.
Penzel, Hans-Joerg; and Kadow, Hermann, to Siemens Aktiengesellschaft. Capacitor arrangement for wave conductor systems. 3,629,730, Cl. 333-1.
Pera, John D.: *See—*
Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A.,3,629,322.
Perazzoni, Pierluigi: *See—*
Siclari, Francesco; Perazzoni, Pierluigi; and Silvestroni, Pier Giorgio,3,629,174.
Perez-Albuerne, Evelio A., to Eastman Kodak Company. Process for controlling electrical resistivity of organic semiconductors. 3,629,158, Cl. 252-500.
Perrin, Jean-Louis; and Milliot, Henri, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Internal combustion engine carburetor. 3,628,516, Cl. 123-136.
Perusek, Ronald J.; and Potter, Ralph M., to General Electric Company. Electrical contact to silicon carbide. 3,629,670, Cl. 317-237.
Pesterfield, Enos Charles, Jr., to Geigy Chemical Corporation. 4-Aryl-2-imidazolone compounds. 3,629,279, Cl. 260-309.6
Pet Incorporated: *See—*
Fullington, William H.; and Maisak, Melvin O., 3,628,807.
Peters, Herbert J.: *See—*
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W.,3,628,282.
Petersen, Kenneth C.; and Blower, Charles A., to Schenectady Chemicals, Inc. Benzaldehyde crosslinked alkyl aryl phosphite. 3,629,199, Cl. 260-53.
Petersen, Kenneth C.: *See—*
Jordan, Manuel A.; and Petersen, Kenneth C.,3,629,195.
Petersen, Povl V.; Lassen, Niels; and Hjortkjaer, Jes, to Kefalas A/S. Antidepressant compositions and method of treating. 3,629,444, Cl. 424-285.
Peterson, Edwin R. Vehicle electronic back-up warning device. 3,629,819, Cl. 340-70.

Petrocci, Alfonso N.: *See—*
Wakeman, Reginald L.; Petrocci, Alfonso N.; and Prodo, Kenneth W.,3,629,462.

Pews, Richard Garth; Hand, Clare R.; and Roberts, Carleton W., to Dow Chemical Company, The. Adducts of tetrabromodialkoxy cyclopentadienes and acrylonitrile. 3,629,315, Cl. 260-464.

Pez, Willibald: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.

Pfaff, G. M., AG: *See—*
Erb, Herbert; Marionek, Erhard; and Steinbach, Walter, 3,628,475.
Gross, Helmut, 3,628,481.
Wenz, Herbert; and Jehle, Fritz, 3,628,482.

Pfizer & Co., Inc.: *See—*
McFarland, James W.; and Ray, Verne A., 3,629,247.

Pfizer Inc.: *See—*
McFarand, James W., 3,629,423.
Miller, Max W., 3,629,431.
Miller, Max W., 3,629,434.
Stephens, Charles R., Jr.; and Torres, Anibal, 3,628,970.

Pharmacia Fine Chemicals AB: *See—*
Soderqvist, Bjorn Gunnar Folke, 3,629,230.

Philamon Incorporated: *See—*
Grib, Boris F., 3,628,781.

Philco-Ford Corporation: *See—*
Berenbaum, Arthur; and McDonough, Robert M., 3,628,288.
Mc Wethy, Irvin E.; and Beck, Bjorn O., 3,628,565.

Philippaerts, Herman Adelbert; Corluy, Hans Josephus; Gernert, Herbert; and Schulz, Guenther E. W., to Gevaert-Agfa N.V. Light sensitive halide material with variable contrast. 3,628,960, Cl. 96-103.

Philips Corporation: *See—*
Tan, Sing Liong, 3,629,498.

Phillips Petroleum Company: *See—*
Drake, William O., 3,629,372.
Jones, Faber B., 3,629,172.
Kleiss, Louis D., 3,629,561.
McCarthy, William C.; and De Lano, Merritt V., Jr., 3,628,314.
Nakayama, Eddie U., 3,629,356.
Peacock, Carl R., 3,628,428.
Van Pool, Joe, 3,628,975.
Voss, Raymond G., 3,629,699.

Phillips, Ronald, to Simms Group Research and Development Limited. Tappets. 3,628,514, Cl. 123-90.48

Phillips, Ronald, to Simms Group Research & Development Limited. Tappet assembly lubricating means. 3,628,629, Cl. 184-6.17

Phillips, William H., Jr., to Carmet Company. Die assembly. 3,628,370, Cl. 72-467.

Phillips, William H., Jr., to Carmet Company. Adjustable draw die. 3,628,449, Cl. 72-468.

Phillips, William N., to LECO, Inc. Constant speed drive means for irrigation machines. 3,628,731, Cl. 239-189.

Photocircuits Corporation: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,628,999.

Photocircuits Division of Kollmorgen Corporation: *See—*
Schneble, Frederick W., Jr.; Leech, Edward John; and McCormack, John Francis, 3,629,185.

Pierce, Ogden R.: *See—*
Kim, Yung Ki; and Pierce, Ogden R.,3,629,115.

Pieuchard, Guy: *See—*
Flamand, Jean; Labeyrie, Antoine; and Pieuchard, Guy,3,628,849.

Pilgrim Industries, Inc.: *See—*
Kuroda, Minoru, 3,629,035.

Piller, Don W.: *See—*
Cutaia, Alfred; McCullough, John W.; and Piller, Don W.,3,629,826.

Piltzecker, John William: *See—*
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William,3,629,385.

Pioneer Magnetics, Inc.: *See—*
Thexton, Melvin W.; and Schaub, Stanley R., 3,629,852.

Pirtle, Othel L., Jr. Syringe. 3,628,523, Cl. 128-2.

Pisors, Raymond, to Sun Electric Corporation. Immediately responsive fluid flow operated switch with normally closed spring contact in flow channel. 3,629,532, Cl. 200-81.9

Pittman, Gary E.: *See—*
Henderson, George A.; and Pittman, Gary E.,3,629,018.

Pittman, Maurice B. Egg handling device. 3,628,818, Cl. 294-16.

Plasmachem, Inc.: *See—*
Baldwin, William C.; and Meyer, Theodore N., 3,628,492.

Plasser, Franz; and Theurer, Josef. Machine for working on rail fastening elements. 3,628,461, Cl. 104-17.

Plasser, Franz; and Theurer, Josef. Track position indicating apparatus. 3,629,583, Cl. 250-83.

Plastics Consulting and Manufacturing Co.: *See—*
Schwartz, Solomon, 3,628,681.

Plempel, Manfred: *See—*
Draber, Wilfried; Buchel, Karlheinz; and Plempel, Manfred,3,629,273.

Plumat, Emile; and Duperroy, Marcel, to Glaverbel S.A. Method and apparatus for sheet glass fabrication. 3,628,936, Cl. 65-90.

Plumer, Roy D.; and Shrout, Harold, to General Motors Corporation. Round extractor for caseless firearm. 3,628,277, Cl. 42-25.

Podell, Allen F., to Adams-Russell Co., Inc. High directivity microstrip coupler having periodically indented conductors. 3,629,733, Cl. 333-10.

Poelman, Herman H. Hand bag with dual securing means. 3,628,583, Cl. 150-33.

Pohl, Karl-Heing; Spencer, Arthur G.; and Westover, Robert F., to Bell Telephone Laboratories, Incorporated. Fabrication of printed circuit. 3,628,243, Cl. 29-625.

Polanyi, Michael L.; and Ostrowski, David S., to American Optical Corporation. Blood oxygenation and pulse rate monitoring apparatus. 3,628,525, Cl. 128-2.

Polaroid Corporation: *See—*
Bader, Henry; and Ferrari, John L., 3,629,272.
Idelson, Elbert M., 3,629,336.

Polichette, Joseph: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph,3,628,999.

Polo, Raymond, to Fabriques de Montres Zenith S.A., Fabrique Movado, and La Chavd de-Fonds. Automatically winding watch. 3,628,326, Cl. 58-82.

Polutnik, Frank J.; and West, Robert W., to United States Steel Corporation. Spraying method and apparatus. 3,628,728, Cl. 239-159.

Polymer Corporation Limited: *See—*
Embree, William H., 3,629,373.

Pommer, Ernst-Heinrich: *See—*
Sander, Bruno; Pommer, Ernst-Heinrich; Clad, Werner Helmut; and Wittmann, Otto,3,629,466.

Pompei, Jean: *See—*
Desvignes, Francois; Guiochon, Paul; and Pompei, Jean,3,629,585.

Popescu, Gabriel, to Surgical Design Corporation. Oscillator and oscillator control circuit. 3,629,726, Cl. 331-116.

Porath, Nachum. Control system for electric motors. 3,629,675, Cl. 318-138.

Porret, Daniel: *See—*
Batzer, Hans; Habermeir, Juergen; and Porret, Daniel,3,629,263.

Port, Eugene B.: *See—*
Beauchamp, William D.; Port, Eugene B.; and Howard, Carlton J.,3,628,919.

Porta Systems Corporation: *See—*
DeLuca, Paul V., 3,628,470.

Porter, Curt C.: *See—*
Mandel, Lewis R.; and Porter, Curt C.,3,629,475.

Porter, Joe A., to Beckman Instruments, Inc. Fluid sample stream conditioning. 3,628,339, Cl. 62-5.

Portland Cement Association: *See—*
Greening, Nathan R.; Copeland, Llewellyn E.; and Verbeck, George J., 3,628,973.

Potter, Bernard Alan: *See—*
Hunt, John William Archibald; and Potter, Bernard Alan,3,628,239.

Potter, Ralph M.: *See—*
Perusek, Ronald J.; and Potter, Ralph M.,3,629,670.

Poturnicki, Raymond H.: *See—*
Cattey, Edward P.; Poturnicki, Raymond H.; Johnston, James J.; and Bedard, Walter J.,3,629,662.

Poupitch, Ouglesa Jules, to Illinois Tool Works Inc. Multipack carriers. 3,628,823, Cl. 294-87.2

Powers, Jack F.: *See—*
Tung, Ching C.; and Powers, Jack F.,3,628,946.

PPG Industries, Inc.: *See—*
Jansson, Robert A.; and Rau, Frank J., 3,628,935.
Stewart, John L., 3,629,554.

Prasse, Herbert F., to Ramsey Corporation. Combination circumferential expansion and spring finger oil control piston ring. 3,628,800, Cl. 277-140.

Precision Processes (Textiles) Limited: *See—*
Goldberg, Alan August; and Fullwood, John A., 3,628,908.
Goldberg, Alan August; and Fullwood, John A., 3,628,909.

Prelletz, Edward R.: *See—*
Bradt, Gordon E.; Frystak, Richard; Mischenko, Nicholas; and Prelletz, Edward R.,3,628,753.

Presson, Robert D.: *See—*
Dominik, Jurgen G.; Presson, Robert D.; and Wysocki, Carl G.,3,629,148.

Presto Lock Co., Inc.: *See—*
Molnar, Richard, 3,628,640.

Preston, Bruce A. Storage cabinet with revolving shelves. 3,628,844, Cl. 312-305.

Priestland, Colin Richard Douglas: *See—*
Jackson, Geoffrey Norman; and Priestland, Colin Richard Douglas,3,629,095.

Primore Sales, Inc.: *See—*
Hutt, Richard Stuart, 3,628,768.

Procter & Gamble Company, The: *See—*
O'Reilly, Anthony E.; and Hong, Charles A., 3,629,123.
Skinner, David L., 3,629,346.

Prodo, Kenneth W.: *See—*
Wakeman, Reginald L.; Petrocci, Alfonso N.; and Prodo, Kenneth W.,3,629,462.

Produits Chimiques Pechiney-Saint-Gobain: *See—*
Graulier, Maxime, 3,628,914.

Progettazoini Mecaniche Nucleari S.p.A.: *See—*
Saporiti, Alfonso, 3,628,507.

Prokes, Milan: *See—*
Stol, Miroslav; Stoy, Vladimir; Kliment, Karel; Prokes, Milan; and Mares, Jaromir,3,628,988.

Promar International, Inc.: *See—*
Richards, Paul E., 3,629,522.

Properzi, Ilario. Extraction device for machines for casting continuous metal ingots. 3,628,597, Cl. 164-344.

Proriol, Jacques; and Semanaz, Daniel, to Rhone-Poulenc S.A. Compositions of vinyl containing diorgano- polysiloxane gums and boron containing organo- polysiloxanes. 3,629,183, Cl. 260-37.

Pryor, James N., to Grace, W. R., & Co. Process for preparing alkalized alumina. 3,629,153, Cl. 252-463.

Puchta, Rolf: *See—*
Fries, Walter; Puchta, Rolf; Nagel, Horstmar; and Gundel, Wolfgang,3,629,126.

Puckett, Lawrence J.; Teague, Marion Warfield; and McCoy, Donald G., to United States of America, Army. Refrigerating vapor bath. 3,628,347, Cl. 62-208.

Puharih, Henry K.; and Lawrence, Joseph L., to Intelectron Corporation. Heaing systems. 3,629,521, Cl. 179-107.

Pulfer, James K.; and Shepertycki, Theodore H., to Canadian Patents and Development Limited. Electronic musical instrument with a pseudo-random pulse sequence generator. 3,629,482, Cl. 84-1.03

Pullman Incorporated: *See—*
Lyons, Robert W.; Parmenter, Robert R.; and Semanick, James B., 3,628,466.

Pupo, David A.: *See—*
Haist, Grant M.; and Pupo, David A.,3,628,955.

Purnell, John Howard, to Foxboro Company, The. Method and apparatus for employing solution and adsorption characteristics of solids and liquids for the balancing of temperature dependence of solubility and adsorbability of vapours and gases. 3,628,310, Cl. 55-67.

Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald, to Agfa-Gevaert Aktiengesellschaft. Photographic diffusion transfer materials and processes utilizing ballasted hydrazone compounds to release mobile acid dyes for transfer. 3,628,952, Cl. 96-3.

Quaal, George J.; Schaefer, William L.; and Kelly, Robert J., to Dow Corning Corporation. Method of improving oxidative stability of fluorosilicone fluids. 3,629,106, Cl. 252-25.

Quackenbush, John J., to National Distillers and Chemical Corporation. Method for flaring the upper ends of plastic bags. 3,629,389, Cl. 264-339.

Quaedvlieg, Mathieu: *See—*
Kirschnek, Helmut; Hildebrand, Dietrich; Hendricks, Udo-Winfried; Meier, Gerhard; and Quaedvlieg, Mathieu,3,628,905.

Quemerais, Philippe: *See—*
Bouthors, Pierre; and Quemerais, Philippe,3,628,388.

Quiram, Ronald G.; and Borst, Gaylord M., to Outboard Marine Corporation. Flexible chemical toilet. 3,628,196, Cl. 4-115.

Rachel, Todd L., to Bendix Corporation, The. Electric starting motor lock-out system. 3,629,598, Cl. 290-38.

Radd, Frederick J.: *See—*
Oertle, Donald H.; and Radd, Frederick J.,3,628,912.

Rains, John Henry, to Ethyl Corporation. Stabilization of chlorinated hydrocarbons. 3,629,128, Cl. 252-171.

Raiteri, Stephen Joseph. Combination coffee maker and teakettle. 3,628,446, Cl. 99-305.

Rakels, Christiaan Johannes, to U.S. Philips Corporation. Electron microscope having object limiting and contrast intensifying diaphragms. 3,629,575, Cl. 250-49.5

Ramo, Oliver H., to Abington Textile Machinery Works, Inc. Vacuum cleaning apparatus to remove industrial waste from machinery. 3,628,213, Cl. 15-352.

Ramseier, Paul, to Bracker AG. Method for the fabrication of weaving heddles. 3,628,574, Cl. 140-72.

Ramsey Corporation: *See—*
Prasse, Herbert F., 3,628,800.

Randall, William E.; and Constable, Geoffrey Ernest Patrick, to Chubb & Son's Lock and Safe Company Limited, Smith's Industries Limited, and Cricklewood Works. Access-control equipment and item-dispensing systems controlled by credit card. 3,629,834, Cl. 340-149.

Rank, William E.; and Dafler, Gene L., to General Motors Corporation. Cooling arrangement for a squirrel cage rotor assembly. 3,629,628, Cl. 310-54.

Rasch, Erhard: *See—*
Hofmann, Dieter; Kuhl, Bernhard; and Rasch, Erhard,3,629,641.

Raseley, Le Roy J., to Ingersoll-Rand Company. Cooling tower fill assembly. 3,628,776, Cl. 261-113.

Rau, Frank J.: *See—*
Jansson, Robert A.; and Rau, Frank J.,3,628,935.

Rausser, Richard; and Tiberi, Robert, to Schering Corporation. 6-Alkoxy-16-alkylidene-17α-lower alkanoyloxy-21- desoxy-4,6-pregnadienes, methods for their manufacture and intermediates produced thereby. 3,629,303, Cl. 260-397.4

Ravenel, Raymond A., to Societe Anonyme Automobiles Citroen. Electronic control device for transmission mechanism. 3,628,642, Cl. 192-0.073

Ray, Verne A.: *See—*
McFarland, James W.; and Ray, Verne A.,3,629,247.

Raymond Lee Organization, Inc., The: *See—*
McSherry, Frank D., Jr., 3,629,790.

Raytheon Company: *See—*
Mims, James R.; and Derby, Palmer P., 3,629,541.

RCA Corporation: *See—*
Bostwick, David Ira, 3,628,847.
Fordyce, William Fulmer; and Mitchell, Edmund John, 3,629,721.
Goyer, Ronald Bruce, 3,629,692.
Hanak, Joseph John, 3,629,519.
Harbert, Donald Duane, 3,629,612.
Hurst, Robert Norman, 3,629,494.
Limberg, Allen Leroy, 3,629,611.
Rempert, Lawrence A., 3,629,503.
Sickanowicz, Wieslaw Wojciech; and Paglione, Robert Wayne, 3,629,734.
Wen, Cheng Paul, 3,629,737.
Wheatley, Carl Franklin, Jr., 3,629,691.

Rea, John H., Sr. Self-propelled sweet corn harvester. 3,628,316, Cl. 56-13.3

Rebsdat, Siegfried: *See—*
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich,3,629,196.

Redelman, Paul E.; and Kwaitkowski, Gerald M. Hydraulic load carrier. 3,628,678, Cl. 214-730.

Redelman, Paul E.: *See—*
Kwiatkowski, Gerald M.; and Redelman, Paul E.,3,628,463.

Reece, Asa M., to United States of America, Navy. Ocean bottom release device. 3,628,821, Cl. 294-83.

Reed, Ray Allen: *See—*
Pedersen, Richard Alan; Reed, Ray Allen; and Underwood, Milton Dean,3,629,609.

Reese, Michael, Hospital and Medical Center: *See—*
Sandberg, Glen, 3,629,594.

Regan, Edgar P., Jr., to United States of America, Navy. Pneumatic portable dynamometer. 3,628,378, Cl. 73-93.

Regel, Erik K.; and Botts, Marion F., to Chemagro Corporation. S-Carboethoxymethyl-S-S-dialkyltrithiophosphates. 3,629,376, Cl. 260-941.

Regie Nationale des Usines Renault: *See—*
Boueil, Raymond; and Rolland, Marcel, 3,628,420.
Bouthors, Pierre; and Quemerais, Philippe, 3,628,388.
Bouthors, Pierre; and Archaux, Francois, 3,629,570.
Lombard, Claude, 3,628,767.
Perrin, Jean-Louis; and Milliot, Henri, 3,628,516.

Rehse, Denis: *See—*
Aronow, Martin L.; and Rehse, Denis,3,628,381.

Rehwaldt, Charles A. Charcoal starting apparatus. 3,628,474, Cl. 110-1.

Reinfeld, Kurt; and Gouye, Emmanuel V., to Koppers Company, Inc. Apparatus for reducing the cross section of a continuous cast strand. 3,628,594, Cl. 164-270.

Reitsema, Robert H.; and Walker, Lynn P. Hydrocarbon pyrolysis process. 3,629,353, Cl. 260-679.

Relyea, Douglas I.: *See—*
Von Schmeling, Bogislav; Davis, Robert A.; and Relyea, Douglas I.,3,629,438.

Relyveld, Edgar; and Henoco, Emile, to Institut Pasteur. Slow-release adsorbed allergens. 3,629,400, Cl. 424-91.

Remberg, Axel: *See—*
Trassl, Werner; Engelke, Wilhelm; and Remberg, Axel,3,628,878.

Rempert, Lawrence A., to RCA Corporation. Digital synchronization system. 3,629,503, Cl. 178-69.5

Repko, Louis L.: *See—*
Bishop, Irving N.; and Repko, Louis L.,3,628,564.

Republic National Bank of Dallas: *See—*
Holt, William J., 3,628,462.

Research Corporation: *See—*
Szita, Jeno C.; and Marvel, Carl S., 3,629,479.

Research Development Techniques, Inc.: *See—*
Weber, Georges R., 3,628,445.

Research Engineering Company: *See—*
Sheesley, John M., 3,628,397.

Reveal, William S., to Shell Oil Company. Regenerator for metal halide sludge catalyst. 3,629,143, Cl. 252-411.

Reviel, Benny L., to ECC Corporation. Trigger control switch with particular bridging and stationary contact arrangements. 3,629,534, Cl. 200-157.

Revlon, Inc.: *See—*
Kabacoff, Bernard L.; and Fairchild, Charles M., 3,629,331.

Reynolds, Frank L.; Langer, Alfred C.; and Tweedie, Ellsworth, to Trigitronics of Connecticut, Inc. Combination connector. 3,629,786, Cl. 339-16.

Reynolds, Harry Herbert: *See—*
Burton, Harold William; and Reynolds, Harry Herbert,3,628,686.

Reynolds Metals Company: *See—*
Cvacho, Daniel S.; Duss, John J., Jr.; and Lee, Harvy W., Jr., 3,628,368.

McClellan, Hearst; and Cvacho, Daniel S., 3,628,451.
Reynolds, R. J., Tobacco Company: *See*—
Sherrill, Joseph H., 3,628,540.
Rhoades, Vaughan W.: *See*—
Glass, Eugene D.; and Rhoades, Vaughan W.,3,628,929.
Rhodes, Donald W., to United States of America, Atomic Energy Commission. Method of maintaining varibale density dissolver solutions critically safe. 3,629,134, Cl. 252-301.1
Rhone-Poulenc S.A.: *See*—
Balitrand, Georges; Mison, Andre; Roget, Jean; and Tarbouriech, Philippe, 3,629,217.
Proriol, Jacques; and Semanaz, Daniel, 3,629,183.
Rhone-Poulence S.A.: *See*—
Florent, Jean Edmond Marie; Mancy, Denise; and Verrier, Jean, 3,629,404.
Ribbing, Donald E.: *See*—
Liess, Richard K.; Ribbing, Donald E.; Stepe, Visvaldis A.; and Wilson, Eugene M.,3,628,612.
Ricci, Louis N.: *See*—
Maier, Alfred E.; Ricci, Louis N.; and Haugh, Charles E.,3,629,744.
Rich, Edward B.: *See*—
Brown, Brent W.; and Rich, Edward B.,3,629,648.
Richards, Paul E., to Promar International, Inc. Headpiece loudspeaker. 3,629,522, Cl. 179-156.
Richardson, Cletus. Wall installation. 3,628,297, Cl. 52-267.
Richardson, George T.: *See*—
Moore, William H.; Richardson, George T.; and Pease, Floyd T.,3,628,336.
Richardson, Stephen M.: *See*—
Jungjohann, Vernon H.; Adamski, Henry S.; and Richardson, Stephen M.,3,628,856.
Richardson, Thomas; and Hustad, Gerald Orton, to Wisconsin Alumni Research Foundation. Polyurethane foams and preparation of same. 3,629,162, Cl. 260-2.5
Richer, Jean-Claude. N-benzylidene cyclooctylamine. 3,629,335, Cl. 260-566.
Richmond, Ray S., to Singer Company, The. Adjustable mounting device for electrostatic copier developer magazine. 3,628,504, Cl. 118-637.
Rickards, David William: *See*—
Collier, John Covell; and Rickards, David William,3,629,748.
Riebel, Aexander; Himmelmann, Wolfgang; Meyer, Karl-Otto; and Van Veelen, George Frans, to Agfa-Gevaert Aktiengesellschaft. Gelatin compositions containing a triazine type hardener and an aliphatic mono- or dicarboxylic acid. 3,628,961, Cl. 96-111.
Rieke Corporation: *See*—
Rieke, Mahlon E., 3,628,705.
Rieke, Mahlon E., to Rieke Corporation. Long-reach laterally extendable and retractable pouring spout. 3,628,705, Cl. 222-527.
Riem, Roland Hendrik; and Dwars, Wilhelmus Theodorus Albertus, to Abitibi Paper Company Ltd. Process for making fire retardant hardboard containing ammonium borate. 3,629,055, Cl. 162-159.
Riemens, Karl: *See*—
Greefkes, Johannes Anton; Riemens, Karl; Korevaar, Geerlof Jan; and Van Dijk, Leonardus Petrus Josef,3,629,619.
Riff, James A., to Motorola, Inc. Voltage regulator for brushless alternators including a square wave multivibrator. 3,629,689, Cl. 322-28.
Riggs, Emmet D.: *See*—
Borwnscombe, Eugene R.; Campbell, William M.; and Riggs, Emmet D.,3,629,796.
Riley, Raymond A., to Dunlop Company Limited, The. Machine tools. 3,628,404, Cl. 82-27.
Rio, Arturo: *See*—
Cernia, Enrico; Rio, Arturo; Malacari, Natale Ercoli; and Mancini, Corrado,3,629,224.
Ripka, William C., to Du Pont de Nemours, E. I., and Company. 3,3-Difluoro-2-substituted steroids and their preparation. 3,629,301, Cl. 260-397.3
Ritchie, E. S., & Sons, Inc.: *See*—
Sherman, Allen Butman, 3,628,690.
Ritsema, Irving M.: *See*—
Pauwels, Edward M.; Ritsema, Irving M.; and Suttle, Ward C.,3,629,635.
RIV-SKF Officine di Villar Perosa S.p.A.: *See*—
Camosso, Domenico; and Lescio, Benito, 3,628,838.
Rivers, Melvin, to Magnatronic Controls, Inc. Automatic coupling device. 3,628,811, Cl. 280-421.
Roberts, Carleton W.: *See*—
Pews, Richard Garth; Hand, Clare R.; and Roberts, Carleton W.,3,629,315.
Roberts, Daniel F. T., to Foster Wheeler Corporation. Bore welding. 3,629,539, Cl. 219-60.
Roberts, John T., to Grace, W. R., & Co. Bag packaging system. 3,628,302, Cl. 53-59.
Roberts, Ray F., to Roll-A-Matic, Inc. Massaging and reducing machine. 3,628,528, Cl. 128-57.
Roberts, William R.: *See*—
Kester, Jack R.; Multhaup, Ray D.; Roberts, William R.; Townsend, Raymond L.; and Young, Kenneth A.,3,629,547.
Robertshaw Controls Company: *See*—
Tyler, Hugh J., 3,629,678.
Robertson, Harry J. Wide angle rear view mirror. 3,628,851, Cl. 350-293.
Robertson, Louis A., to United States of America, Army. Chemical agent detector holder and method of testing air and liquids for chemical agent contamination. 3,628,915, Cl. 23-230.
Robillard, Jean J. A., to Keuffel and Esser Company, mesne. Diazo material and visible light development process therefore. 3,628,954, Cl. 96-49.
Roche, Edward Noland. Plastic laminate trimmer. 3,628,579, Cl. 144-134.
Roche, Michel, to Commissariat a l'Energie Atomique. Device for producing bursts of charged particles. 3,629,643, Cl. 315-18.
Rock-Ola Manufacturing Corporation: *See*—
Bookout, Floyd V., 3,628,643.
Rockwell, Donald W., to Texas Instruments, Incorporated. Method and system for refraction seismic exploration. 3,629,798, Cl. 340-15.5
Rod, Trygve R., to Xerox Corporation. Stamp dispenser. 3,628,408, Cl. 83-175.
Rodriguez, Rodolfo, to Miles Laboratories, Inc. Process for producing an anti-depressant effect with piperazine quinolines. 3,629,418, Cl. 424-250.
Rody, Jean: *See*—
Heller, Hansjorg; Rody, Jean; and Keller, Ernst,3,629,191.
Heller, Hansjorg; Rody, Jean; and Keller, Ernst,3,629,192.
Rogers, Harry W., Jr. Graphic arts cutting instrument. 3,628,412, Cl. 83-455.
Rogers, Howard D.: *See*—
Seck, John C.; Rogers, Howard D.; Graham, Thomas G.; and Hannen, James H., Jr.,3,628,478.
Rogers, Roy E., to Container Corporation of America. Reclosable end structure for container body. 3,628,689, Cl. 220-53.
Roget, Jean: *See*—
Balitrand, Georges; Mison, Andre; Roget, Jean; and Tarbouriech, Philippe,3,629,217.
Rohr, Harry: *See*—
Ott, Karl-Heinz; Schuster, Herbert; Dinges, Karl; and Rohr, Harry,3,629,370.
Rohrberg, Roderick G.; and Harvey, Don E., 1/2 each to North American Rockwell Corporation, and Air Products and Chemicals, Inc. Tube joining method and means. 3,628,236, Cl. 29-482.
Roland, George W.: *See*—
Melamed, Nathan T.; Roland, George W.; and Hopkins, Richard H.,3,629,136.
Roll-A-Matic, Inc.: *See*—
Roberts, Ray F., 3,628,528.
Rolland, Marcel: *See*—
Boucil, Raymond; and Rolland, Marcel,3,628,420.
Rose, Francis Leslie: *See*—
Maguire, John Anthony; and Rose, Francis Leslie,3,629,260.
Roseland, Luther M., to McDonnell Douglas Corporation, mesne. Polyurethane bonding material for plastic laminates. 3,629,182, Cl. 260-33.4
Rosen, Melvin Harris; and Blatter, Herbert Morton, to Ciba Corporation. Coccidiostatic composition containing thiophene-1,1- dioxides. 3,629,437, Cl. 424-275.
Rosenberg, Robert B.: *See*—
Huebler, Jack; Rosenberg, Robert B.; and Kardas, Alan,3,628,902.
Ross, Charles W.: *See*—
Davis, Frederick B., 3rd; and Ross, Charles W.,3,629,562.
Ross, George H.: *See*—
Anderson, John E.; Parish, Clyde E.; and Ross, George H.,3,629,311.
Ross, Lester M., Sr.; and Stripling, William W., to United States of America, Army. Self-compensated azimuth pickoff device. 3,628,385, Cl. 74-5.6
Ross, Peter M., Jr., to Ford Motor Company. Sleeve nut connector. 3,628,816, Cl. 287-23.
Rost, Thomas E., to Hills-McCanna Company. Diaphragm valve construction. 3,628,770, Cl. 251-331.
Rotax Limited: *See*—
Maycock, William Henry; and Chafer, Henry James, 3,629,652.
Rotterdams Havenreinigingen Transport Bedrijf: *See*—
In 'T Veld, Cornelis, 3,628,660.
Rouse, Alan D.: *See*—
Brown, William F.; Goetchius, Ronald J.; Furman, George R.; and Rouse, Alan D.,3,629,835.
Rouse, John Wilson, to American Can Company. Apparatus for orienting can ends. 3,628,650, Cl. 198-33.
Roussel-UCLAF: *See*—
Bertin, Daniel; and Nedelec, Lucien, 3,629,245.
Costerousse, Germain; and Gasc, Jean-Claude, 3,629,244.
Rowan, Preston D.: *See*—
Walling Dean D.; and Rowan, Preston D.,3,629,763.
Rowe, Murray A., to K & R Industries Inc. Earth-moving machines for subgrading highways. 3,628,264, Cl. 37-108.
Royal Seating Corporation: *See*—
Jennings, Roy E., 3,628,832.
Ruark, Brian R.: *See*—
Willoughby, Joseph A.; and Ruark, Brian R.,3,628,235.
Rubin, Herbert, to Inmont Corporation. Process of electrodeposition using composite membrane means. 3,629,087, Cl. 204-181.
Ruchlak, Kasimir: *See*—
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich,3,629,196.

Rucker Company, The: *See—*
Douglas, Ellwood S.; and Wahlgren, Wallace W.,3,629,759.
Rue, Charles V., to International Telephone & Telegraph Corporation. Abrasive cutting wheels. 3,628,292, Cl. 51-206.
Rue, Robert W.: *See—*
Fruehauf, Waldo G.; and Rue, Robert W.,3,628,424.
Ruger, William B., to Sturm, Ruger & Co., Inc. Revolver cylinder crane latch mechanism. 3,628,278, Cl. 42-62.
Rumanowski, Edmund J., to Allied Chemical Corporation. Benzyl-N-(N-butyl)-chlorophenoxythio- butyrimidates as herbicides. 3,628,944, Cl. 71-98.
Rusnack, John G.: *See—*
Walters, William J.; Rusnack, John G.; and Chen, Peter P. D.,3,629,535.
Russell, Edward Alan, to Lucas, Joseph, (Industries) Limited. Connection of metals to ceramics. 3,628,234, Cl. 29-473.1
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Apparatus having rotating bashing for forming fibers. 3,628,931, Cl. 65-11.
Russell, Robert Gordon: *See—*
Jackson, Albert Edward; and Russell, Robert Gordon,3,628,501.
Ruth, Samuel M. Wall air conditioner. 3,628,350, Cl. 62-429.
Ryals, John N.: *See—*
Lummus, James L.; and Ryals, John N.,3,629,102.
Ryan, John W.: *See—*
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W.,3,628,282.
Ryan, William M., to Dexter Corporation, The. Diamine-curable polyurethane compositions containing oleic acid as catalyst. 3,629,168, Cl. 260-18.
Rygiol, Henry V. Multi-arc welding. 3,629,548, Cl. 219-131.
Rys, Tadeusz J., to Square D Company. Switch enclosure with sealing means operable by switch operating handle. 3,629,536, Cl. 200-168.
S & C Electric Company: *See—*
Scherer, Henry W., 3,629,768.
Schmunk, Edwin W., 3,629,767.
S & S Corrugated Paper Machinery Co., Inc.: *See—*
Shields, Albert F., 3,628,410.
Saari, Walfred S., to Merck & Co., Inc.Derivatives of 3-hydroxy-α-(1-aminoethyl)- benzyl alcohol. 3,629,285, Cl. 260-332.3
Sadek, George Edward: *See—*
Marino, Morris Anthony; Birkhaug, Frederic John; and Sadek, George Edward,3,629,307.
Sagara, Takaaki: *See—*
Katsuya, Noboru; Sagara, Takaaki; Takahashi, Reiji; and Ojima, Takashi,3,628,966.
Sahara, Hajime: *See—*
Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunehiko,3,628,224.
Sahni, Ravinder J., to Cogar Corporation. Resistor with means for decreasing current density. 3,629,782, Cl. 338-308.
said Best and said Ostrowsky assors. to: *See—*
Osrowsky, Efrem; Heffernan, Bart T.; and Best, Aaron R., 3,628,535.
Saito, Nobuyoshi. Seat frame structure. 3,628,780, Cl. 267-110.
Sakai, Kunio: *See—*
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu,3,629,011.
Sakurai, Michio; and Kawashima, Yoshichi, to Nippon Denso Kabushiki Kaisha. Composite semiconductor device and semiconductor voltage regulator device for vehicles. 3,629,623, Cl. 307-303.
Sakurai, Yasuhiko, to Nippon Denso Company Limited. Signal device for preventing rear-end collision of automobiles. 3,629,820, Cl. 340-72.
Salomon, Georges P. J. Resilient locking device for security ski bindings. 3,628,803, Cl. 280-11.35
Sanborn, William Eugene: *See—*
Lindsley, John Francis; and Sanborn, William Eugene,3,629,152.
Sanchez, George: *See—*
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W.,3,628,282.
Sanchez, Jose, to Pennwalt Corporation. Homopolymerization of vinyl chloride with acyl sulfonyl peroxide initiator. 3,629,220, Cl. 260-92.8
Sandberg, Glen, to Reese, Michael, Hospital and Medical Center. Patient position monitoring method and system for use during medical diagnostic and therapeutic procedures. 3,629,594, Cl. 250-221.
Sander, Bruno; Pommer, Ernst-Heinrich; Clad, Werner Helmut; and Wittmann, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Synergistic mixtures containing penachlorophenol. 3,629,466, Cl. 424-325.
Sanders Associates, Inc.: *See—*
Brown, Benjamin W.; and Valentino, James A., 3,629,715.
Sanders, Jack. Adjustable concrete deck forming platform. 3,628,765, Cl. 249-19.
Sandoz AG: *See—*
Fanchamps, Albert; and Taeschler, Max, 3,629,471.
Sandoz Ltd.: *See—*
Fanchamps, Albert; and Taeschler, Max, 3,629,471.
Sands, Emmett J.; and Von Beckmann, Helmuh Rolf Erich, to United States of America, Navy, mesne. Missile destruct initiation assembly Combned tie and i grper. 3,628,458, Cl. 40--8 0 3
Sanger, Albert J. Vehicle windshield carrying vehicle serial number. 3,629,044, Cl. 161-5.
Sankyo Company Limited: *See—*
Takahi, Yukiyoshi; Tomita, Kazuo; and Oka, Hidehiko, 3,629,430.
Sano, Yoshiharu: *See—*
Kimura, Yoshiaki; Sano, Yoshiharu; Kumazawa, Ryoji; and Hisayasu, Yokohama,3,629,024.
Sapkus, Jurgis: *See—*
Johnson, Rollin C.; Lewis, J Stephen; Malek, Jack H.; Peters, Herbert J.; Sanchez, George; Sapkus, Jurgis; and Ryan, John W.,3,628,282.
Saporiti, Alfonso, to Progettazoini Mecaniche Nucleari S.p.A. Liquid metal heated steam generators and superheaters. 3,628,507, Cl. 122-32.
Satake, Kunio; Sone, Tomiho; and Hamada, Minoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for bonding rubber composition to metal. 3,629,038, Cl. 156-245.
Satake, Toshihiko. Grain polishing machine 146-279.. 3,628,582, Cl.
Sato, Akihiko, to Nippon Kogaku K.K. Shock preventing device for a mirror moving mechanism of a single lens reflex camera. 3,628,436, Cl. 95-42.
Sato, Akira: *See—*
Shiba, Keisuke; and Sato, Akira,3,628,964.
Sattler, Gunter; and Weimann, Klaus, to Aktiengesellschaft Brown, Boveri & Cie. Process for making a bevelled cavity in a semiconductor element. 3,628,294, Cl. 51-283.
Sauter, Ewald: *See—*
Altfeld, Hans; and Sauter, Ewald,3,629,540.
Sauter Packaging Company: *See—*
Nichols, Matthew, 3,628,694.
Sauvan, Jacques, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Pattern recognition, and particularly determination of homomorphy between vector systems forming interrelated structures. 3,629,849, Cl. 340-172.5
Savage, George R.: *See—*
McClure, Bill M.; Berky, John J.; and Savage, George R.,3,629,639.
Savage, Henry R.: *See—*
Segura, Marnell A.; Savage, Henry R.; and Burroughs, John L.,3,628,986.
Savell, Charles L., to Ford Motor Company. Articulated door hinge. 3,628,216, Cl. 16-163.
Saw, Yoichi: *See—*
Masuda, Toru; Saw, Yoichi; Kawakami, Yoshiyuki; and Miyano, Seiji,3,629,268.
Sawaya, Assad S.; and Stolar, Morris Emmanuel, to Miles Laboratories, Inc. Anti-bacterial and synergistic anti-fungal compositions. 3,629,414, Cl. 424-120.
Sayre, Edwin D.; and Stoffer, Lewis J., to General Electric Company. Compressor blades. 3,628,890, Cl. 416-230.
Scarrott, Gordon George; and Mc Cormick, Thomas M., to International Computers Limited. Character recognition apparatus. 3,629,830, Cl. 340-146.3
Schaber, Christian; and Schmid, Gunter, to Hettich, Franz, Messrs., KG Chuwa Woo Industry Co., d. Hinge for articulating a wall pivotable to and fro between open and closed positions. 3,628,217, Cl. 16-190.
Schaefer, William L.: *See—*
Quaal, George J.; Schaefer, William L.; and Kelly, Robert J.,3,629,106.
Schafer, Gustav; and Trombetta, Adam, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of oxazine dyestuffs. 3,629,248, Cl. 260-242.
Schafer, Rudolf, to Singer Company, The, mesne. Loop taker support for sewing machines. 3,628,479, Cl. 112-167.
Schaffner, Carl P.: *See—*
Gordon, Harry W.; and Schaffner, Carl P.,3,629,403.
Schafft, Hugo W., to Motorola, Inc. Piezoelectric bender bilayer with flexible corrugated center vane. 3,629,625, Cl. 310-8.6
Schaller, Frank H., to Data Printer Corporation. Hammer actuator construction for high speed printers. 3,629,755, Cl. 335-271.
Schaub, Stanley R.: *See—*
Thexton, Melvin W.; and Schaub, Stanley R.,3,629,852.
Schaumann, Wolfgang; Dietmann, Karl; and Hardebeck, Klaus, to Boehringer-Mannheim GmbH. Compositions and methods for circulatory stimulation and saluretic activity which employ 2-methyl-4-hydroxy- pyrido[2,3-d]-pyrimidine. 3,629,420, Cl. 424-251.
Scheinman, Arnold Herbert, to Bell Telephone Laboratories, Incorporated. Machine process for assigning interconnected components to locations in a planar matrix. 3,629,843, Cl. 340-172.5
Scheinpflug, Hans: *See—*
Schrader, Gerhard; Mannes, Karl; and Scheinpflug, Hans,3,629,411.
Schenck, Leslie M.; and Nunn, Leslie G., Jr., to GAF Corporation. Process for preparing phosphate ester surface active agents in the presence of a bis (hydroxymethyl) phosphinic acid color inhibitor. 3,629,377, Cl. 260-980.
Schenectady Chemicals, Inc.: *See—*
Jordan, Manuel A.; and Petersen, Kenneth C., 3,629,195.
Petersen, Kenneth C.; and Blower, Charles A., 3,629,199.
Scherer, Henry W., to S & C Electric Company. Circuit interrupter with damper body to reduce speed of moving terminal having a cross slide latch. 3,629,768, Cl. 337-275.

Schering Corporation: *See—*
Rausser, Richard; and Tiberi, Robert, 3,629,303.
Scheuermann, Horst: *See—*
Eilingsfeld, Heinz; and Scheuermann, Horst,3,629,254.
Schlang & Reichart Maschinenfabrik: *See—*
Gumlich, Willi, 3,628,391.
Schlemmer, Alfred H.; and Pearson, Melvin A., to Hamill, Ralph, mesne. Heat tunnel for shrinking plastic jackets. 3,628,258, Cl. 34-56.
Schlichting, Hans L.; and Lichtblau, Ellis I., to Hooker Chemical Corporation. Stabilization of phenols. 3,629,339, Cl. 260-621.
Schlotzhauer, Allan T.: *See—*
Newman, Douglas A.; and Schlotzhauer, Allan T.,3,628,979.
Schlumberger Technology Corporation: *See—*
Bernard, Jean Louis, 3,628,606.
Urbanosky, Harold J., 3,628,569.
Schmank, Horst W., to Chattem Chemicals, division of Chattem Drug & Chemical Company. Water soluble basic aluminum polyhydroxyl hydrocarbon complexes. 3,629,229, Cl. 260-209.
Schmedding, Herbert, to Windmoller & Holscher. Plastics sacks provided with venting or aerating perforations. 3,628,720, Cl. 229-55.
Schmid, Gunter: *See—*
Schaber, Christian; and Schmid, Gunter,3,628,217.
Schmid, Julius, Inc.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 3,629,403.
Schmid, Rolf: *See—*
Lohse, Friedrich; Schmid, Rolf; and Batzer, Hans,3,629,226.
Schmidt, David, to Sulzer Brothers Limited. Closed-cycle gas turbine nuclear power plant. 3,629,060, Cl. 176-20.
Schmidt, Robert W. Die accelerator. 3,628,450, Cl. 83-38.
Schmied, Rudolf: *See—*
Loliger, Willi; and Schmied, Rudolf,3,628,573.
Schmitt, Frank J. Height gauge. 3,628,496, Cl. 116-124.
Schmitt, William H., to Alberto-Culver Company. Foamable toothpastes. 3,629,398, Cl. 424-43.
Schmitz, Henry; and DeVault, Robert L., to Bristol-Myers Company. Demetic acid and method of producing same. 3,629,407, Cl. 424-122.
Schmookler, Martin S.; and Weinberger, Arnold, to International Business Machines Corporation. Decimal adder for directly implementing BCD addition utilizing logic circuitry. 3,629,565, Cl. 235-174.
Schmunk, Edwin W., to S & C Electric Company. Circuit interrupter with damper body to reduce speed of moving terminal. 3,629,767, Cl. 337-275.
Schneble, Frederick W., Jr.; Leech, Edward John; and McCormack, John Francis, to Photocircuits Division of Kollmorgen Corporation. Metallization of insulating substrates. 3,629,185, Cl. 260-40.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, to Photocircuits Corporation. Plated through hole printed circuit boards. 3,628,999, Cl. 117-212.
Schneider, Sol, to United States of America, Army. Gas tube isolator and charging circuit for pulse amplifiers in phased arrays. 3,629,659, Cl. 317-51.
Schneider, William A., to Texas Instruments, Incorporated. Gapped deconvolution reverberation removal. 3,629,800, Cl. 340-15.5
Schneider, Wolfgang: *See—*
Heer, Alfred; Schneider, Wolfgang; and Dreher, Bernd,3,629,181.
Schneiderhan, Edward M.: *See—*
Marsh, Lynn W., Jr.; and Schneiderhan, Edward M.,3,629,861.
Schonbek, Arnold A. Connector for chandelier trimmings. 3,629,571, Cl. 240-153.
Schott, Lawrence A. Apparatus for making foamed glass panels. 3,628,937, Cl. 65-141.
Schrader, Gerhard; Mannes, Karl; and Scheinpflug, Hans, to Farbenfabriken Bayer Aktiengesellschaft. Fungicidal compositions and methods of combating fungi using O-alkyl-S,S-dialkyl dithiophosphates. 3,629,411, Cl. 424-217.
Schranz, Karl-Wilhelm: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.
Schreiber, William R.: *See—*
Blatt, Leland F.; and Schreiber, William R.,3,628,783.
Schreyer, Heinz: *See—*
Gleixner, Franz; and Schreyer, Heinz,3,629,589.
Schroeder, Thaddeus, to General Motors Corporation. Single logic gate monostable multivibrator. 3,629,620, Cl. 307-273.
Schuemann, Wilfred C.: *See—*
Moore, Alvin G.; and Schuemann, Wilfred C.,3,628,371.
Schuierer, Erich: *See—*
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich,3,629,196.
Schulz, Guenther E. W.: *See—*
Philippaerts, Herman Adelbert; Corluy, Hans Josephus; Gernert, Herbert; and Schulz, Guenther E. W.,3,628,960.
Schuster, Herbert: *See—*
Ott, Karl-Heinz; Schuster, Herbert; Dinges, Karl; and Rohr, Harry,3,629,370.
Schuster, Wilhelm; and Grether, Adolf, to Industrie-Werke Karlsruhe Aktiengesellschaft. Device for transferring individual articles to a packaging machine. 3,628,646, Cl. 198-22.
Schwartz, Imre Meir. Asbestos processing apparatus. 3,628,321, Cl. 57-35.
Schwartz, Jerome. Intra-uterine device for contraception. 3,628,530, Cl. 128-130.
Schwartz, Solomon, to Plastics Consulting and Manufacturing Co. Stopper. 3,628,681, Cl. 215-48.
Schwarz, Hans Helmut: *See—*
Klotz, Gunther; and Schwarz, Hans Helmut,3,628,341.
Schwarze, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Cyanoalkylaminotriazines. 3,629,259, Cl. 260-249.8
Schwee, Leonard J., to United States of America, Navy. Readout and recording method and apparatus. 3,629,520, Cl. 179-100.2
Schweickart, Beverly J.: *See—*
Schweickart, Jay F.,3,628,671.
Schweickart, Jay F., deceased0 (by Schweickart, Beverly J.; administratrix), to Anchor Hocking Corporation. Display stand. 3,628,671, Cl. 211-73.
Schweizerische Industrie-Gesellschaft: *See—*
Knuchel, Max, 3,628,656.
Scientific Advances, Inc.: *See—*
Crites, Nelson A., 3,629,774.
SCM Corporation: *See—*
Bradbury, Wilburn F., 3,629,502.
Bradbury, Wilburn F.; and Misthos, George E., 3,629,504.
Means, Gary L., 3,629,677.
Worrall, John L., 3,629,507.
Scott Paper Company: *See—*
Bastian, Lehyman J.; and Shuman, Clyde W., Jr., 3,628,743.
Scourtas, Frank: *See—*
Weinstein, Aaron; and Scourtas, Frank,3,629,050.
Scribner, Richard M., to Du Pont de Nemours, E. I., and Company. Use of 2,5-dinitro-1,1-(substituted)-dioxy-2,3,4,5- tetrachloro-3-cyclopentenes to protect plants from soil fungi. 3,629,439, Cl. 424-278.
Searle, G. D., & Co.: *See—*
Baran, John S.; and Laos, Ivar, 3,629,304.
Sebek, Oldrich K.; and Whaley, Howard A., to Upjohn Company, The. Lipoxamycin and process for preparing same. 3,629,402, Cl. 424-117.
Seck, John C.; Rogers, Howard D.; Graham, Thomas G.; and Hannen, James H., Jr., to Singer Company, The. Mechanism for selectively retaining or removing an exchangeable pattern. 3,628,478, Cl. 112-158.
Sedra, Adel S.; and Smith, Kenneth C., to Canadian Patents and Development Limited. Digitally controlled variable-gain linear D. C. amplifier. 3,629,720, Cl. 330-86.
Segura, Marnell A.; Savage, Henry R.; and Burroughs, John L., to Esso Research and Engineering Company. Water repellent reduced iron ore. 3,628,986, Cl. 117-49.
Seitanakis, George P., to Allegheny Ludlum Steel Corporation. Electrical device casing materials. 3,629,760, Cl. 336-90.
Seitel, Heinz, to Telesco Brophey Limited. Umbrella. 3,628,548, Cl. 135-44.
Seitz, William R.; and Whitney, Donald R., to General Motors Corporation. Hydraulic limited slip differential. 3,628,399, Cl. 74-711.
Sekhar, Neelkant C., to Upjohn Company, The. Storage-stable hemostatic transfusion suspensions of blood platelets, glucose, magnesium chloride and certain protaglandias. 3,629,071, Cl. 195-1.8
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi, to Meiji Seika Kaisha, Ltd. Pesticide for controlling bacterial and fungal diseases of rice plant. 3,629,428, Cl. 424-270.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakata, Shinsaku; Hori, Hitoshi; Tagami, Kohei; and Suzuki, Masaru, 3,628,987.
Sekizawa, Yasuharu: *See—*
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi,3,629,428.
Sekmakas, Kazys, to De Soto, Inc. Production of maleic acid copolymers and hydroxy derivatives thereof. 3,629,357, Cl. 260-78.5
Selman, Stanley; and Squire, Edward N., to Du Pont de Nemours, E. I., and Company. Alkyl esters of 2-hydroxy-2-alkoxy 3,3,3-trifluoropropanoic acid. 3,629,323, Cl. 260-484.
Semanaz, Daniel: *See—*
Proriol, Jacques; and Semanaz, Daniel,3,629,183.
Semanick, James B.: *See—*
Lyons, Robert W.; Parmenter, Robert R.; and Semanick, James B.,3,628,466.
Senf, George A., to Sprague Electric Company. Microstrip delay line. 3,629,738, Cl. 333-30.
Sennari, Mutsuo: *See—*
Fukuda, Junichi; Tashiro, Kijuro; Sennari, Mutsuo; and Nagashima, Kenjiro,3,629,368.
Seragnoli, Ariosto. Automatic machine for the condition of cigarettes into packets. 3,628,309, Cl. 53-230.
Sere, Georges. Plastic bottle racks. 3,628,684, Cl. 220-21.
Service d'Exploitation Industrielle des Tabac et, des Allumettes:*See—*
Imbert, Pierre, 3,628,409.
Servo Corporation of America: *See—*
Gallagher, Cornelius A., 3,629,572.
Setter, Georg. Valve and pump. 3,628,897, Cl. 417-519.
Sevcon Engineering Limited: *See—*
Gurwicz, David, 3,629,615.
Gurwicz, David, 3,629,681.

Shannon, Raymond M.: *See—*
Chisholm, Hamilton C.; and Shannon, Raymond M.,3,629,845.
Shannon, Richard F., to Owens-Corning Fiberglas Corporation. Pipe insulation and method of installing same. 3,628,572, Cl. 138-161.
Shannon, Robert D., to Du Pont de Nemours, E. I., and Company. Electrical resistors comprising rhombohedral platinum cobalt oxides. 3,629,156, Cl. 252-518.
Shapiro, Aron Leibovich: *See—*
Levin, Semen Zakharovich; and Shapiro, Aron Leibovich,3,629,343.
Sharvania Oil & Grease Corporation: *See—*
Hammer, William C., 3,628,630.
Shatzel, Norman W., to American Optical Corporation. Retractable specimen holder for a microtome. 3,628,411, Cl. 83-414.
Shaw, Charles A. Invoice and tape printing machine. 3,628,452, Cl. 101-90.
Sheahan, Edward J.; and Staisil, Donald F., to Ford Motor Company. Hood latch assembly. 3,628,817, Cl. 292-247.
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kamlade, William G., Jr., to University of Southern Illinois Foundation. Polyvalent bovine vaccines and methods of making and using same. 3,629,413, Cl. 424-89.
Sheesley, John M., to Research Engineering Company. Valve actuator. 3,628,397, Cl. 74-625.
Shell Oil Company: *See—*
Adams, Charles T., 3,629,146.
Allen, Roy A.; and Somerville, George R., 3,629,167.
Caruso, Gerard P., 3,629,108.
Dietz, Daniel N., 3,628,607.
Hahn, George A.; and La Rochelle, John H., 3,629,144.
Reveal, William S., 3,629,143.
Vogel, Charles B., 3,629,832.
Weaver, John J., 3,629,119.
Winkler, De Loss E., 3,629,371.
Shellhause, Ronald L., to General Motors Corporation. Hydraulically balanced open center hydraulic power brake. 3,628,331, Cl. 60-54.6
Shen, Chung Yu; and Stahlheber, Norman Earl, to Monsanto Company. Process for producing granular alkali metal nitrilotriacetate. 3,629,329, Cl. 260-534.
Shenango Furnace Company, The: *See—*
DeVaney, Fred D., 3,628,947.
Shenk, Wilbur, III: *See—*
Isham, Allan B.; and Shenk, Wilbur, III,3,629,026.
Shepard, Wallace D. Extensible construction marker. 3,628,253, Cl. 33-189.
Shepertycki, Theodore H.: *See—*
Pulfer, James K.; and Shepertycki, Theodore H.,3,629,482.
Sherman, Allen Butman, to Ritchie, E. S., & Sons, Inc. Expansion chamber construction. 3,628,690, Cl. 220-85.
Sherman, Harvey George, to Flex-Step, Inc. Resiliently flexible horseshoe. 3,628,608, Cl. 168-4.
Sherrill, Joseph H., to Reynolds, R. J., Tobacco Company. Filter cigarette. 3,628,540, Cl. 131-10.5
Sherritt Gordon Mines Limited: *See—*
Lavender, William J., 3,628,777.
Sherwin-Williams Company, The: *See—*
Grivas, John C., 3,629,457.
Shiba, Keisuke; and Sato, Akira, to Fuji Shashin Film Kabushiki Kaisha. Photographic supersensitized silver halide emulsions. 3,628,964, Cl. 96-124.
Shibuya, Kenji: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi,3,629,707.
Shibuya, Kunitoyo: *See—*
Fujita, Shigeo; Takatsu, Akihiko; and Shibuya, Kunitoyo,3,629,233.
Shields, Albert F., to S & S Corrugated Paper Machinery Co., Inc. Cutoff control for cutting long sheets. 3,628,410, Cl. 83-287.
Shiga, Kazumasa, to Matsushita Electric Industrial Company Limited. Semi-conductor oscillating resonance circuit device. 3,629,724, Cl. 331-96.
Shimell, Alan B.: *See—*
Marmon, Frank E.; and Shimell, Alan B.,3,628,879.
Shinetsu Chemical Company: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; and Yamamoto, Akira, 3,629,237.
Shinyei Co., Inc.: *See—*
Sunano, Naomasa; and Nishida, Shinichi, 3,629,671.
Shionogi & Co., Ltd.: *See—*
Kitahonoki, Keizo; and Kotera, Katsumi, 3,629,239.
Komeno, Taichiro, 3,629,240.
Shipley Company, Inc.: *See—*
Isaacson, Calvin, 3,629,036.
Shipro Kasei Kaisha Limited: *See—*
Onishi, Akiyoshi; and Fukuoka, Naohiko, 3,629,194.
Shirasaki, Takayasu: *See—*
Morikawa, Kiyoshi; Echigoya, Etsuro; Shirasaki, Takayasu; and Furuoya, Itsuo,3,629,145.
Shlesinger, Bernard Edward, Jr. Cross bar matrix for programmed switching. 3,629,836, Cl. 340-166.
Shobert, Samuel M. Method for making a toboggan. 3,629,041, Cl. 156-289.
Shoor, Bernard A., to Becton, Dickinson Electronics Company, mesne. Transducer. 3,629,773, Cl. 338-43.
Showers, Joseph R., Jr., to Indiana Cash Drawer Company. Cash drawer opening apparatus. 3,628,724, Cl. 235-22.
Shriver, Donald S., to Allied Chemical Corporation. Non-resinous compositions containing a urea- formaldehyde reaction product and melamine. 3,629,176, Cl. 260-29.4
Shroff, Arvin P., to Ortho Pharmaceutical Corporation. Suppression of reproduction with 3-oxime and 3- oxime esters of 19-nortestosterone. 3,629,415, Cl. 424-238.
Shrout, Harold: *See—*
Plumer, Roy D.; and Shrout, Harold,3,628,277.
Shuman, Clyde W., Jr.: *See—*
Bastian, Lehyman J.; and Shuman, Clyde W., Jr.,3,628,743.
Shute, Charles F.: *See—*
Wenthe, Stephen J.; and Shute, Charles F.,3,628,840.
Sibley, Louis F. Universal mounting for truck covers. 3,628,826, Cl. 296-98.
Sick, Erwin: *See—*
Gleixner, Franz; and Schreyer, Heinz, 3,629,589.
Sickels, David W., to Electrogenics, Inc. Piston deburring apparatus. 3,629,093, Cl. 204-224.
Sickler, Raymond W. Decorative shutter for mobile homes and the like. 3,628,298, Cl. 52-473.
Siclari, Francesco; Perazzoni, Pierluigi; and Silvestroni, Pier Giorgio, to Snia Viscosa Societa Nationale Industria Appliazioni S.p.A. Heat-stabilized and lightfast polyamides. 3,629,174, Cl. 260-29.1
Sidaplax N.V.: *See—*
Vermeulen, Emile Raymond, 3,628,301.
Siddiqi, Majid; and Beg, Zafarul Hasan. Process for combatting hypercholesterolemia. 3,629,449, Cl. 424-317.
Sidel, Societe Anonyme: *See—*
Arvisenet, Jacques, 3,628,649.
Sidenstick, James E.; Brown, Richard W.; Nichols, Herbert E.; and Burggraf, Frederick, to General Electric Company. Fluid cooled airfoil. 3,628,885, Cl. 416-97.
Sidenstick, James E.: *See—*
Smuland, Robert J.; Hope, Ned A.; and Sidenstick, James E.,3,628,880.
Siegfried Aktiengesellschaft: *See—*
Wagner-Jauregg, Theodor; and Fitz, Egon, 3,629,253.
Siekanowicz, Wieslaw Wojciech; and Paglione, Robert Wayne, to RCA Corporation. Broadband double ridge waveguide magic tee. 3,629,734, Cl. 333-11.
SIEMAG Siegener Maschinenbau GmbH: *See—*
Leitner, Hermann J., 3,628,366.
Siemens Aktiengesellschaft: *See—*
Gutbier, Heinrich, 3,629,075.
Liebe, Wolfgang; and Wendt, Maria Susanne, 3,629,629.
Massar, Ernst, 3,629,690.
Penzel, Hans-Joerg; and Kadow, Hermann, 3,629,730.
Trassl, Werner; Engelke, Wilhelm; and Remberg, Axel, 3,628,878.
Weber, Ulrich; and Gullasch, Jurgen, 3,629,577.
Wilhelm, Wilhelm, 3,629,610.
Signal Companies, Inc., The: *See—*
Anderson, John E.; Parish, Clyde E.; and Ross, George H., 3,629,311.
Signode Corporation: *See—*
Offenwanger, Josef, 3,628,714.
Silber, Robert H.; Kelley, Kane L.; and Trenner, Idamae G., to Merck & Co., Inc. Topical anti-inflammatory agent. 3,629,412, Cl. 424-232.
Silverblatt, Leo, to Koppers Company, Inc. Coke oven door. 3,629,094, Cl. 202-248.
Silvestroni, Pier Giorgio: *See—*
Siclari, Francesco; Perazzoni, Pierluigi; and Silvestroni, Pier Giorgio,3,629,174.
Simmons, William L., to Burroughs Corporation. Jam detection device for document stacking. 3,628,788, Cl. 271-87.
Simms Group Research & Development Limited: *See—*
Phillips, Ronald, 3,628,629.
Simms Group Research and Development Limited: *See—*
Phillips, Ronald, 3,628,514.
Simonsen, Knud, Industries Ltd.: *See—*
Simonsen, Knud; Sondergaard, Soren; and Eriksen, Erik Norgaard, 3,628,218.
Simonsen, Knud; Sondergaard, Soren; and Eriksen, Erik Norgaard, to Simonsen, Knud, Industries Ltd. Carcass processing machine. 3,628,218, Cl. 17-1.
Simplex Wire and Cable Company: *See—*
Hunt, George H., 3,629,110.
Simpson, Henry W.: *See—*
Cralle, Walter O., Jr.; Simpson, Henry W.; and Kockler, Barry C.,3,628,644.
Simpson, Michael Charles Stephen: *See—*
Paddison, Eric; and Simpson, Michael Charles Stephen,3,629,657.
Singer Company, The: *See—*
Clark, William R.; Hare, George H.; and Osborn, Peter E., 3,629,850.
Richmond, Ray S., 3,628,504.
Schafer, Rudolf, 3,628,479.
Seck, John C.; Rogers, Howard D.; Graham, Thomas G.; and Hannen, James H., Jr., 3,628,478.
Van Ness, William C., 3,628,480.
Sionnet, Jean: *See—*
Demaison, Paul; Menissier, Pierre; and Sionnet, Jean,3,629,067.

Skandinavisk Emballage Aktieselskab: *See*--
Orstam, Preben E. R., 3,628,652.

Skinner, David L., to Procter & Gamble Company, The. Reactions of alkali metal tetraalkylaluminum compounds with diatomic halogens. 3,629,346, Cl. 260-652.

Skousgaard, E. Chris. Air balance for water closet. 3,628,195, Cl. 4-26.

Slater, Robert W.: *See*—
McConnel, Christopher W.; and Slater, Robert W.,3,628,775.

Slawson, Kenneth Leonard, to Houdaille Industries, Inc. Apparatus for controlled deceleration in numerical positioning. 3,629,560, Cl. 235-151.11

Slonimsky, Grigory Lvovich: *See*—
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.

Slonneger, John L., to General Electric Company. Quiet operating condition responsive snap switch mechanism. 3,629,769, Cl. 337-318.

Smeulers, Wouter, to U.S. Philips Corporation. Synchronizing signal separator with means to prevent discharge of a threshold voltage capacitor during noise pulses. 3,629,500, Cl. 178-7.3

Smith, Earl D.: *See*—
Ephraim, Max, Jr.; and Smith, Earl D.,3,629,676.

Smith, Eugene E.: *See*—
Laudien, Helmut F.; and Smith, Eugene E.,3,628,374.

Smith, Herbert Q., to Pennsalt Chemicals Corporation. Anti-bacterial and anti-fungal treatment with sulfoxides. 3,629,427, Cl. 424--270

Smith International, Inc.: *See*—
Neilson, William J., 3,628,616.

Smith, Jeffrey P.Device for positioning a patient's shoulders during X-ray examination. 3,629,581, Cl. 250-50.

Smith, John H., to Coninental Oil Company. Control system for fluid catalytic cracking process. 3,629,097, Cl. 208-159.

Smith, Kenneth C.: *See*—
Sedra, Adel S.; and Smith, Kenneth C.,3,629,720.

Smith Kline & French Laboratories: *See*—
Kaiser, Carl; and Zirkle, Charles L., 3,629,267.

Smith, Theodore H.: *See*—
Stuler, C Robert; and Smith, Theodore H.,3,629,600.

Smith, Wayne E.; Galiano, Francis R.; and Havens, Richard H., to Gulf Research & Development Company. Foamed blend of propane-precipitated asphalt ethylene-acrylate/methacrylate copolymer and polyol crosslinked in-situ. 3,629,164, Cl. 260-2.5

Smithe, F. L., Machine Company, Inc.: *See*—
Hornung, Helmut O., 3,628,304.

Smith's Industries Limited:*See*—
Randall, William E.; and Constable, Geoffrey Ernest Patrick, 3,629,834.

Smuland, Robert J.; Hope, Ned A.; and Sidenstick, James E., to General Electric Company. Vane assembly and temperature control arrangement. 3,628,880, Cl. 415-115.

Snaper, Alvin A.; and Farrell, Frank C., to Advanced Patent Technology, Inc. Apparatus for cooling reflector walls. 3,628,601, Cl. 165-47.

Snaper, Alvin A.; and Farrell, Frank C., to Advanced Patent Technology, Inc. Adjustably positionable reflectors. 3,628,852, Cl. 350-295.

Snia Viscosa Societa Nationale Industria Appliazioni S.p.A.: *See*—
Siclari, Francesco; Perazzoni, Pierluigi; and Silvestroni, Pier Giorgio, 3,629,174.

Snijders, Wilfred Andre Maria: *See*—
Zegers, Leo Eduard; Snijders, Wilfred Andre Maria; and Kuilman, Han,3,629,505.

Snitzer, Elias, to American Optical Corporation. Athermal laser using a one-eighth wave Faraday rotator. 3,629,723, Cl. 331-94.5

Snodgrass, John N., to General Motors Corporation. Viscous fluid clutch. 3,628,641, Cl. 192-58.

Snyder Corporation: *See*—
Chope, Ronald D.; and Hevonkoski, Frank A., 3,628,400.

Soardi, Italo; and Pagani, Giancarlo, to Ates Componenti Elettronici S.p.A. Stabilized power supply with D-C voltage step- down for transistorized television receivers and the like. 3,629,497, Cl. 178-7.3

Soberski, George A., to Eaton Yale & Towne, Inc. Valve for evaporative loss control. 3,628,517, Cl. 123-136.

Sobottka, Dieter; and Folkens, Dieter, to Olympia Werke AG. Magnetically actuated coupling. 3,629,754, Cl. 335-253.

Societa Asfalti Bitumi Cementi e Derwati, S.p.A.: *See*—
Cernia, Enrico; Rio, Arturo; Malacari, Natale Ercoli; and Mancini, Corrado, 3,629,224.

Societa Farmaceutici Italia: *See*—
Bernardi, Luigi; and Pallini, Ugo, 3,629,305.

Societe Anonyme Automobiles Citroen: *See*—
Grosseau, Albert, 3,628,513.
Ravenel, Raymond A., 3,628,642.

Societe Anonyme dite: L'Oreal:*See*—
Kalopissis, Gregoire; and Abegg, Jean-Louis, 3,628,544.

Societe Anonyme dite: Orsymonde: *See*—
Lafon, Louis, 3,629,443.

Societe Anonyme dite: Societe Nationale des Petroles d'Aquitane:*See*—
Lalet, Philippe; and Miletto, Andre, 3,629,369.

Societe Anonyme Francaise du Ferodo: *See*—
Fieni, Walter, 3,628,603.

Societe de la Viscose Suisse: *See*—
Krieger, Alex, 3,629,188.

Societe des Lunetiers: *See*—
Tagnon, Luc A., 3,628,874.

Societe Industrielle de Combustible Nucleire: *See*—
Demaison, Paul; Menissier, Pierre; and Sionnet, Jean, 3,629,067.

Societe Industrielle Honeywell Bull: *See*—
Deproux, Jacques Roland, 3,628,713.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.:*See*—
Sauvan, Jacques, 3,629,849.

Societe Nouvelle Spidem: *See*—
Diolot, Lucien, 3,628,363.

Soderqvist, Bjorn Gunnar Folke, to Pharmacia Fine Chemicals AB. Quaternization with alkylene oxides. 3,629,230, Cl. 260-209.

Solar Laboratories, Inc.: *See*—
Beightol, Leroy E., 3,629,772.

Soldatos, Anthony C., to Union Carbide Corporation. Method of improving the tack of rubbers. 3,629,084, Cl. 204-168.

Soldatos, Anthony C., to Union Carbide Corporation. Curable polyepoxide compositions containing polymers of cyclic esters. 3,629,361, Cl. 260-830.

Soldatos, Anthony C., to Union Carbide Corporation. Phenolic resin compositions containing polymers of cyclic esters. 3,629,364, Cl. 260-838.

Solmi, Ferruccio. Process for the manufacture of glazed ceramic bodies, in particular tiles, with only one firing. 3,628,989, Cl. 117-70.

Solvay & Cie: *See*—
Coppens, Guillaume, 3,629,085.

Somerville, George R.: *See*—
Allen, Roy A.; and Somerville, George R.,3,629,167.

Somora, Zdeno; Zavodsky, Ladislav; and Kalisky, Benedikt, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Decantation apparatus. 3,628,667, Cl. 210-519.

Sondergaard, Soren: *See*—
Simonsen, Knud; Sondergaard, Soren; and Eriksen, Erik Norgaard,3,628,218.

Sone, Tomiho: *See*—
Satake, Kunio; Sone, Tomiho; and Hamada, Minoru,3,629,038.

Soulakis, George; Baynes, William R.; and La Branche, Harvey W., to Mattel, Inc. Miniature high speed electric toy racing vehicle with rechargeable battery. 3,628,284, Cl. 46-243.

Soulakis, George: *See*—
Edwards, Christopher J. C.; La Branche, Harvey W.; and Soulakis, George,3,628,725.

Southwire Company: *See*—
Todd, Chester F., 3,628,706.

Sowko, John J., Sr., to Carmet Company. Method for the low temperature joining of carbides. 3,628,233, Cl. 29-473.1

Sparks, Allen K., to Universal Oil Products Company. Benzodiazoboroles as stabilizers for hydrocarbon polymers. 3,629,190, Cl. 260-45.8

Spectrol Electronics Corporation: *See*—
De Long, Robert J.; and Gerwitz, Paul F., 3,629,777.

Spencer, Arthur G.: *See*—
Pohl, Karl-Heing; Spencer, Arthur G.; and Westover, Robert F.,3,628,243.

Spencer-Bate, Harry Arthur Hele; and Jones, John Michael, to Spencer-Bate, Harry Arthur Hele, mesne. Positioning mechanism. 3,628,865, Cl. 355-53.

Spencer, William R., to General Electric Company. Gas turbine engine inlet guide vane actuator with automatic reset. 3,628,329, Cl. 60-39.29

Spencer-Bate, Harry Arthur Hele: *See*—
Spencer-Bate, Harry Arthur Hele; and Jones, John Michael, 3,628,865.

Sperry Rand Corporation: *See*—
Brickner, David R., 3,629,566.
Burmeistew, William W., 3,628,254.
Frank, Robert I.; and Moberg, William L., 3,629,088.
Hare, Charles A., 3,629,841.
Johnson, Gordon P.; and Gerlach, Le Roy E., 3,628,726.
Keatinge, Gerald R.; and Young, Herman S. W., 3,628,394.
Veron, Harry; and Carey, Richard Allan, Sr., 3,629,638.

Spezialchemie Gesellschaft mit beschrankter Haftung und Co., Arzneimittelfabrik: *See*—
Braeuer, Hans; and Brinkhoff, Hans, 3,629,441.

Spiess, C. F., & Sohn Chemische Fabrik: *See*—
Hieke, Erhard, 3,628,707.

Sprague Electric Company: *See*—
Ettinger, Robert H., 3,628,560.
Hegeland, Walter, 3,629,781.
Senf, George A., 3,629,738.

Sprenger, Walter, to Sulzer Brothers Limited. Method of assembling a plural-stage axial compressor. 3,628,922, Cl. 29-156.4

Springer, Otto M.: *See*—
Typrowicz, Wladyslaw; and Springer, Otto M.,3,628,208.

Square D Company: *See*—
Dietz, Robert E., 3,629,529.
Rys, Tadeusz J., 3,629,536.

Squibb, E. R., & Sons, Inc.: *See*—
Hoehn, Hans, 3,629,271.

Squire, Edward N.: *See*—
Selman, Stanley; and Squire, Edward N.,3,629,323.

Staats, William A.: *See*—
Baynes, William R.; Hiltpold, John P.; and Staats, William A.,3,629,680.

Staba, Emil John; and Kaul, Balkrishena, to United States of America, Health, Education and Welfare. Production of diosgenin by plant tissue culture technique. 3,628,287, Cl. 47-58.

Stackman, Robert W.; and Conciatori, Anthony B., to Celanese Corporation. Glycidyl esters of sterically hindered organic acids. 3,629,295, Cl. 260-348.

Stackpole Carbon Company: *See*—
Bang, Mogens W., 3,629,778.

Stahlheber, Norman Earl: *See*—
Shen, Chung Yu; and Stahlheber, Norman Earl,3,629,329.

Staiger, Bruno, to International Standard Electric Corporation. Wire stripping and wrapping gun. 3,628,402, Cl. 81-9.5

Staisil, Donald F.: *See*—
Sheahan, Edward J.; and Staisil, Donald F.,3,628,817.

Staley, John. Mold forming compactor with selectively variable hydraulic. 3,628,593, Cl. 164-208.

Stamm, Walter, to Stauffer Chemical Company. Thiol derivatives of olefin-maleic anhydride copolymers. 3,629,205, Cl. 260-78.5

Standard Oil Company (Indiana): *See*—
Longland, George M., Jr., 3,629,321.

Standard Oil Company, The (Ohio): *See*—
Dominik, Jurgen G.; Presson, Robert D.; and Wysocki, Carl G., 3,629,148.

Stankiewicz, Raymond S., to United States of America, Atomic Energy Commission. Temperature activated reactor core clamp. 3,629,070, Cl. 176-87.

Stanley Drug Products, Inc.: *See*—
Cook, Elton S.; and Tanaka, Kinji, 3,629,451.

Stanwood, David A., to Swimquip, Inc. Means of skimming a pool by use of vortex. 3,628,664, Cl. 210-169.

Stapf, Virgil Melvin: *See*—
Babunovic, Momir; and Stapf, Virgil Melvin,3,629,595.

Stark, Daniel J.: *See*—
Easterly, Donald O.; and Stark, Daniel J.,3,628,748.

Starkey, Bertrand Julian; and Watson, Alexander Smith, to EMI Limited, mesne. Oceanographic survey device. 3,628,205, Cl. 9-8.

Starkey, George W., to United States of America, Army. Laser boresighting method and apparatus. 3,628,868, Cl 356-152.

Staudt, Juergen H. Electrostatic motor. 3,629,624, Cl. 310-6.

Stauffer Chemical Company: *See*—
Stamm, Walter, 3,629,205.

Stautzenberger, Adin L.; and Hobbs, Charles C., Jr., to Celanese Corporation. Production of epoxidized alkoxy alkadienes and of alkanetriols, particularly 1,2,4-butanetriol. 3,629,341, Cl. 260-635.

Stautzenberger, Adin L.; and MacLean, Alexander F., to Celanese Corporation. Purification of organic acids. 3,629,328, Cl. 260-525.

Stecker, Joseph F.: *See*—
Stewart, Aubrey P., Jr.; and Stecker, Joseph F.,3,628,972.

Stehle, Max; and Kirchner, Egon, to Brown Boveri & Cie Aktiengesellschaft. Apparatus for severing of metal band. 3,628,710, Cl. 225-96.5

Steidl, Dieter: *See*—
Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi,3,628,739.

Steimle, Wayne D. Hydro-massage assembly. 3,628,529, Cl. 128-66.

Stein Industries: *See*—
Maille, Claude, 3,628,473.

Steinbach, Walter: *See*—
Erb, Herbert; Marionek, Erhard; and Steinbach, Walter,3,628,475.

Steinmann, Henry W., to Celanese Corporation. Polyoxadiazoles. 3,629,198, Cl. 260-47.

Stendenbach, Karl-Heinz: *See*—
Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi,3,628,739.

Stepanich, Fred C.; and Adams, Thomas L. Anchorable pile. 3,628,337, Cl. 61-53.68

Stepe, Visvaldis A.: *See*—
Liess, Richard K.; Ribbing, Donald E.; Stepe, Visvaldis A.; and Wilson, Eugene M.,3,628,612.

Stephens, Charles R., Jr.; and Torres, Anibal, to Pfizer Inc. Flavoring agent containing Z-hydroxy-3- ethylcyclopent-Z-EN-1-one. 3,628,970, Cl. 99-140.

Stephenson, Harry B.; Clapson, William J.; and Wolkar, Edwin L., to Eagle-Picher Industries, Inc. Curing of liquid polythiopolymercaptan polymers. 3,629,206, Cl. 260-79.

Stephenson, Robert L., to Allied Chemical Corporation. Power actuated rear view mirror. 3,628,862, Cl. 350--289

Sterling Drug Inc.: *See*—
Diana, Guy D., 3,629,455.

Sterling Plastics Company: *See*—
Fleming, Jack Fairchild, 3,628,270.

Sterling Seal Company: *See*—
Hendrickson, Richard F.; and King, Roderick V., 3,628,699.

Stern, Hansjoerg, to General Electric Company. Fluid amplifier torsional speed reference. 3,628,552, Cl. 137-81.5

Stevens, Bruce W., to Menasha Corporation, mesne. Tube feeding means. 3,628,406, Cl. 82-89.

Stevens, Carlile R. Automotive electrical system test apparatus. 3,629,704, Cl. 324-158.

Stewart, Aubrey P., Jr.; and Stecker, Joseph F., to Allied Chemical Corporation. Sterilization of milk products containing fat. 3,628,972, Cl. 99-212.

Stewart, John L., to PPG Industries, Inc. Electrically heated multiple glazed unit. 3,629,554, Cl. 219-522.

Stichl, Roy Thomas, Jr., to Du Pont de Nemours, E. I., and Company. Monomers and polymers of acryloyloxyphenol and derivatives thereof. 3,629,197, Cl. 260-47.

Stocker, Emil, to Ciba-Geigy AG. Process of making perylene pigments. 3,628,976, Cl. 106-288.

Stockton, Thomas R., to Ford Motor Company. Reversely drivable fluidic device. 3,628,623, Cl. 180-79.2

Stoffer, Lewis J.: *See*—
Sayre, Edwin D.; and Stoffer, Lewis J.,3,628,890.

Stokes, John B., III: *See*—
Burkhart, Dean C.; Conrad, Lee R.; and Stokes, John B., III,3,629,360.

Stokes, Kenneth B., to General Mills, Inc. Nitrocellulose coatings improved by certain polyioscyanates and aldimine or ketimine blocked polyamines. 3,629,013, Cl. 148-6.15

Stol, Miroslav; Stoy, Vladimir; Kliment, Karel; Prokes, Milan; and Mares, Jaromir, to Ceskoslovenska akademie ved. Method for providing artificial dentures with a soft hydrogel layer. 3,628,988, Cl. 117-63.

Stolar, Morris Emmanuel: *See*—
Sawaya, Assad S.; and Stolar, Morris Emmanuel,3,629,414.

Stoltman, Donald D.: *See*—
Kehoe, Ellsworth A.; and Stoltman, Donald D.,3,628,773.

Stone, John James, to Arnold Engineering Company, The. Mill for rolling a thin, fat product. ,000,00!, Cl. 72-242.

Stoop, Hans Rudolf; and Flury, Karl, to Defensor AG. Humidifier. 3,628,312, Cl. 55-232.

Stopek, Benjamin, to Ideal Toy Corporation. Cushion attachment for shoes. 3,628,262, Cl. 36-7.5

Storey, Edwin C.: *See*—
Moulds, John W.; and Storey, Edwin C.,3,628,510.

Stork Amsterdam N.V.: *See*—
Boer, Jort, 3,628,448.
Wolzak, Willem, 3,628,651.

Stork, Fritz, to Telefunken Patentverwertungsgesellschaft m.b.H. Method of producing a semiconductor device. 3,629,017, Cl. 148-179.

Story, Roger W. Aircraft navigation teaching device. 3,628,256, Cl. 35-10.2

Stoscup, Gordon W. Integrally formed underwater viewing device with peripheral skirt. 3,628,853, Cl. 350-319.

Stouder, Virgil: *See*—
Knedlik, Omar S.; and Stouder, Virgil,3,628,759.

Stout, David A., to Universal Oil Products Company. Pallet restraining system. 3,628,467, Cl. 105-369.

Stoy, Vladimir: *See*—
Stol, Miroslav; Stoy, Vladimir; Kliment, Karel; Prokes, Milan; and Mares, Jaromir,3,628,988.

Strange, Harold O.: *See*—
Pellegrini, John P., Jr.; and Strange, Harold O.,3,629,476.

Streator Dependable Mfg., Co.: *See*—
Heinz, Gerald O., 3,628,672.

Strehlow, Wolfgang H., to Minnesota Mining and Manufacturing Company. Method of chemically polishing crystals of II(b)- VI(a) system. 3,629,023, Cl. 156-17.

Stribling, Robert M.: *See*—
Buffington, Herman L.; and Stribling, Robert M.,3,628,289.

Strickland, Wilfred A.: *See*—
Clay, Burton R.; and Strickland, Wilfred A.,3,628,869.

Stripling, William W.: *See*—
Ross, Lester M., Sr.; and Stripling, William W.,3,628,385.

Strole, John C.; Szerenyi, Laszlo I.; and Moreines, Harold, to Bendix Corporation, The. Three wire digital synchronizer. 3,629,711, Cl. 328-72.

Struck, Robert T.: *See*—
Gorin, Everett; Struck, Robert T.; and Kulik, Metro D.,3,629,159.

Struthers Scientific and International Corporation: *See*—
Nault, Larry George, 3,628,917.

Stucki, Daniel: *See*—
Woodward, Derrick R.; and Stucki, Daniel,3,629,058.

Studiengesellschaft Kohle m.b.H.: *See*—
Wilke, Gunther; and Heimbach, Paul, 3,629,347.

Stuemky, Robert E., to Gates Rubber Company, The. Flexible coupling. 3,628,352, Cl. 64-15.

Stuler, C Robert; and Smith, Theodore H., said Smith assor. to said Stuler. Emergency traffic light control. 3,629,600, Cl. 307-66.

Sturm, Ruger & Co., Inc.: *See*—
Ruger, William B., 3,628,278.

Sugimoto, Hiroshi: *See*—
Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunehiko,3,628,224.

Sulcek, Charles E., to Whirlpool Corporation. Refuse compactor cabinet structure. 3,628,841, Cl. 312-204.

Sulich, Janusz S., to Bendix Corporation, The. Fluidic fluid metering system. 3,628,774, Cl. 261-36.

Sulzer Brothers Limited: *See—*
Schmidt, David, 3,629,060.
Sprenger, Walter, 3,628,922.

Sumitomo Chemical Co., Ltd.: *See—*
Nozaki, Meguma, 3,629,211.

Sumitomo Chemical Company, Ltd.: *See—*
Arasaki, Seitetsu; Wakimura, Atsushi; Yamamoto, Hisao; and Inaba, Shigeho, 3,629,238.
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 3,629,215.
Yamamoto, Hisao; and Nakao, Masaru, 3,629,284.
Yamanouchi, Saburo; Yasuno, Kiyoshi; and Kitamura, Shuji, 3,629,170.

Sumitomo Electric Industries, Ltd.: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, 3,629,707.

Sumitomo, Hirokazu: *See—*
Yonezawa, Toshiya; and Sumitomo, Hirokazu,3,629,015.

Summers, John, & Sons Limited: *See—*
Jackson, Albert Edward; and Russell, Robert Gordon, 3,628,501.

Sun Electric Corporation: *See—*
Pisors, Raymond, 3,629,532.

Sun, Jui-Yuan, to Atlantic Richfield Company. Epoxidation process. 3,629,294, Cl. 260-348.5

Sun Oil Company: *See—*
Hoover, Theodore S., 3,629,352.
Kohn, Edward M., 3,629,012.

Sunano, Naomasa; and Nishida, Shinichi, to Shinyei Co., Inc. Memory and non-memory type switching element. 3,629,671, Cl. 317-238.

Sunne Gummifabrik AB: *See—*
Johnsson, John Gillis, 3,629,569.

Surgical Design Corporation: *See—*
Popescu, Gabriel, 3,629,726.

Suroff, Leonard W., to Ultrasonic Systems, Inc. Ultrasonic object supporting system in ski-slope or the like. 3,628,789, Cl. 272-56.5

Susquehanna Corporation, The: *See—*
Olcott, Eugene L., 3,629,049.

Suttle, Ward C.: *See—*
Pauwels, Edward M.; Ritsema, Irving M.; and Suttle, Ward C.,3,629,635.

Suzuki, Kiyoshi, to Toyoseito Kabushiki Kaisha. Sugar products having a coagulation preventive property and superior fluidity. 3,629,003, Cl. 127-30.

Suzuki, Masaru: *See—*
Nakata, Shinsaku; Hori, Hitoshi; Tagami, Kohei; and Suzuki, Masaru,3,628,987.

Suzuki, Masataka, to Mitsubishi Denki Kabushiki Kaisha. Magnetron mounting device in an electronic range. 3,629,538, Cl. 219-10.55

Suzuki, Shoichi, to Nippon Gakki Seizo Kabushiki Kaisha. Tremolo effect producing device. 3,629,484, Cl. 84-1.25

Svendsen, John A., to Minnesota Mining and Manufacturing Company. Heating device. 3,629,549, Cl. 219-216.

Svenska Dataregister AB: *See—*
Englund, Gosta R.; Mattsson, Mats E.; and Lindelow, Claes-Goran, 3,629,563.

Swampillai, Christy Edward Selvanayagam; and Edwards, Derek Reginald, to British Insulated Callander's Cables Limited. Gas insulated busbar installation. 3,629,486, Cl. 174-16.

Swider, Robert A.: *See—*
Brewer, George E. F.; and Swider, Robert A.,3,629,086.

Swimquip, Inc.: *See—*
Stanwood, David A., 3,628,664.

Sylvania Electric Products, Inc.: *See—*
Audesse, Emery; and Cookson, Robert Wilbur, 3,629,640.
Denenberg, David, Jr., 3,629,622.
Gannoe, Thomas Earl, 3,629,077.
Mathers, James E.; Mikus, Felix F.; and Mehalchick, Emil J., 3,629,131.
Taylor, Thomas Lester, 3,629,645.
Waybright, George Cleveland, 3,629,644.

Syntex Corporation: *See—*
Fried, John H., 3,629,242.

Szeremy, Norman, to General Electric Company. Television receiver safety interlock system for power connections. 3,629,789, Cl. 339-33.

Szerenyi, Laszlo I.: *See—*
Strole, John C.; Szerenyi, Laszlo I.; and Moreines, Harold,3,629,711.

Szita, Jeno C.; and Marvel, Carl S., to Research Corporation, mesne. Sulfoalkylated polybenzimidazoles. 3,629,479, Cl. 260-79.3

Szpilka, Stanislaw. Method of obtaining the signal dependent upon the percentage asymmetry of a 3-phase system. 3,629,713, Cl. 328-149.

Taccone, Russell M., to Bangor Punta Operations, Inc. Flaskless squeeze molding machine. 3,628,592, Cl. 164-183.

Tachibana, Masakiyo: *See—*
Inoue, Touru; and Tachibana, Masakiyo,3,628,932.

Tada, Shoji: *See—*
Kamada, Takayoshi; Nagai, Nobuo; and Tada, Shoji,3,629,660.

Taeffner, Klaus; and Luhrig, Hermann, to Agfa-Gevaert Aktiengesellschaft. Winding shaft for roll-cutting machines. 3,628,745, Cl. 242-56.9

Taeschler, Max: *See—*
Fanchamps, Albert; and Taeschler, Max,3,629,471.

Tagami, Kohei: *See—*
Nakata, Shinsaku; Hori, Hitoshi; Tagami, Kohei; and Suzuki, Masaru,3,628,987.

Tagnon, Luc A., to Societe des Lunetiers. Compact optical sighting level with internal fine setting of the horizontality of the line of sight. 3,628,874, Cl. 356-249.

Takahashi, Katsushi. Slicer. 3,628,581, Cl. 146-153.

Takahashi, Reiji: *See—*
Katsuya, Noboru; Sagara, Takaaki; Takahashi, Reiji; and Ojima, Takashi,3,628,966.

Takahashi, Shonosuke; and Tanaka, Mitsuo, to Nippon Pulp Industry Co., Ltd., and Arakawa, Rinsan Kagaku Kogyo Kabushiki Kaisha. Coating color, a coated paper applied with said coating color and a process for preparing said coated paper. 3,629,166, Cl. 260-17.3

Takahashi, Toshinaka: *See—*
Uzu, Keizo; Nakano, Kinichi; and Takahashi, Toshinaka,3,629,283.

Takahi, Yukiyoshi; Tomita, Kazuo; and Oka, Hidehiko, to Sankyo Company Limited. Isoxazole fungicidal compositions and methods of use. 3,629,430, Cl. 424-272.

Takamura, Shuichi: *See—*
Kawamura, Shigeo; Hirano, Takayoshi; Takamura, Shuichi; and Okazaki, Masahiko,3,629,306.

Takao, Hiroyoshi: *See—*
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi,3,629,215.

Takatsu, Akihiko: *See—*
Fujita, Shigeo; Takatsu, Akihiko; and Shibuya, Kunitoyo,3,629,233.

Takayama, Masoa; and Arai, Kiyoyuki, to Kabushiki Kaisha Koparai. Photographic electronic shutter with power switch control device. 3,628,433, Cl. 95-53.

Takeda Chemical Industries, Ltd.: *See—*
Honjo, Mikio; Imai, Kinichi; and Kobayashi, Kunio, 3,629,236.
Masuda, Toru; Saw, Yoichi; Kawakami, Yoshiyuki; and Miyano, Seiji, 3,629,268.
Morikawa, Kiyoshi; Echigoya, Etsuro; Shirasaki, Takayasu; and Furuoya, Itsuo, 3,629,145.

Takeuchi, Hideshi: *See—*
Terai, Kiyoshi; Kurioka. Tatsumi; Takeuchi, Hideshi; and Nakao, Zirou,3,628,338.

Takeya, Masahisa: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.

Tako, Kazuteru; and Gunji, Hiroshi. Centrifugal powdering machine. 3,628,740, Cl. 241-152.

Tamada, Mitsuaki: *See—*
Hayakawa, Ken; and Tamada, Mitsuaki,3,629,858.

Tamag Basel AG: *See—*
Buchmann, Paul; Egri, Laszlo; and Beringer, Monique, 3,628,541.

Tampex Incorporated: *See—*
Donohue, Francis X., 3,628,534.

Tan, Sing Liong, to Philips Corporation. Circuit arrangement for vertical aperture correction. 3,629,498, Cl. 178-7.2

Tanaka, Hisao: *See—*
Itakura, Jo; Tanaka, Hisao; and Ito, Hiroo,3,629,349.

Tanaka, Kenzo; and Tomita, Fujihiko, to Yamaha Hatsudoki Kabushiki Kaisha. Transmission device for a miniature snow endless- track vehicle. 3,628,619, Cl. 180-9.64

Tanaka, Kinji: *See—*
Cook, Elton S.; and Tanaka, Kinji,3,629,451.

Tanaka, Mitsuo: *See—*
Takahashi, Shonosuke; and Tanaka, Mitsuo,3,629,166.

Tanaka, Toshiki, to Nippon Chemical Works Co., Ltd. Novel diarylene azolyl-styrene compounds and the preparation and use thereof. 3,629,246, Cl. 260-240.

Tang, Chung-Wai: *See—*
Maletskos, Constantine J.; and Tang, Chung-Wai,3,629,132.

Tapis, Jose Guarro. Method of manufacturing a compound laminar material. 3,629,031, Cl. 156-190.

Tarbouriech, Philippe: *See—*
Balitrand, Georges; Mison, Andre; Roget, Jean; and Tarbouriech, Philippe,3,629,217.

Tashiro, Kijuro: *See—*
Fukuda, Junichi; Tashiro, Kijuro; Sennari, Mutsuo; and Nagashima, Kenjiro,3,629,368.

Tashiro, Kouich: *See—*
Kamada, Hatohiko; and Tashiro, Kouich,3,628,990.

Tatter, Charles W.: *See—*
Noznick, Peter P.; and Tatter, Charles W.,3,628,968.

Taylor, Frank Finley, to Bell Telephone Laboratories, Incorporated. Multiple memory accessing system. 3,629,842, Cl. 340-172.5

Taylor, Jefferson H.; and Jones, James J., to Texas Instruments, Incorporated. Prerecorded electronic tape controlled circuit testing system utilizing digital signal logic. 3,629,695, Cl. 324-57.

Taylor Manufacturing Company: *See—*
Beard, John H., 3,628,647.

Taylor, Ronald William, to Datran Limited. Statistical display apparatus. 3,629,838, Cl. 340-172.

Taylor, Thomas Lester, to Sylvania Electric Products, Inc. Television receiver protective system for pre- venting screen burn. 3,629,645, Cl. 315-20.

Teac Corporation: *See—*
Fujikawa, Sukeyoshi, 3,628,754.
Teague, Marion Warfield: *See—*
Puckett, Lawrence J.; Teague, Marion Warfield; and McCoy, Donald G.,3,628,347.
Technicon Corporation: *See—*
Isreeli, Jack; Kassel, Aaron; and Dannewitz, Robert, 3,628,891.
Tegelindustriens Centralkontor AB: *See—*
Elgenstierna, Reinhold Magnus, 3,629,384.
Teldix GmbH: *See—*
Hattwig, Peter, 3,629,815.
Telefunken Patentverwertungsgesellschaft m.b.H.: *See—*
Stork, Fritz, 3,629,017.
Telesco Brophey Limited: *See—*
Seitel, Heinz, 3,628,548.
Television Laboratories, Inc.: *See—*
Nienaber, Frank H., 3,629,750.
Templin, Herbert: *See—*
Weber, Walter; and Templin, Herbert,3,628,806.
Teotino, Uberto; Della Bella, Davide; and Ferrari, Vittorio, to Whitefin Holdings S.A. Pharmaceutical compositions acting on the central nervous system containing disubstituted aminoethanols. 3,629,435, Cl. 424-274.
Terai, Kiyoshi; Kurioka, Tatsumi; Takeuchi, Hideshi; and Nakao, Zirou, to Kawasaki Jukogyo Kabushiki Kaisha. Ship building device. 3,628,338, Cl. 61-67.
Teranishi, Haruo: *See—*
Ishikawa, Toshikatsu; and Teranishi, Haruo,3,628,984.
Terao, Munetika: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo,3,628,219.
Terry, Lewis E., to Motorola, Inc. Use of platium thin films as mask in semiconductor processing. 3,629,022, Cl. 156-17.
Texaco Inc.: *See—*
Brown, William F.; Goetchius, Ronald J.; Furman, George R.; and Rouse, Alan D., 3,629,835.
Casida, Lester E., Jr.; and Abbott, Bernard J., 3,629,072.
Eckert, George W.; and Cadorette, Raymond, 3,628,926.
Maddox, Jim, Jr., 3,629,104.
Weiss, Walter J., 3,629,105.
Texas Instruments, Incorporated: *See—*
Brede, Erwin C., 3,629,801.
Fish, John Gaylord, 3,628,907.
Henderson, George A.; and Pittman, Gary E., 3,629,018.
Hingorany, Ashok R., 3,629,668.
Rockwell, Donald W., 3,629,798.
Schneider, William A., 3,629,800.
Taylor, Jefferson H.; and Jones, James J., 3,629,695.
White, Sheldon S., 3,628,923.
Willoughby, Joseph A.; and Ruark, Brian R., 3,628,235.
Textron, Inc.: *See—*
Casey, Robert S.; and Martin, Lynn P., 3,628,876.
Maynard, George A.; and Briggs, Peleg B., Jr., 3,628,715.
Vannest, James L., 3,628,839.
Textronix, Inc.: *See—*
Frye, George J., 3,629,731.
Theilemann, Horst. Process for the preparation of photographic emulsion. 3,628,959, Cl. 96-94.
Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef,3,628,461.
Plasser, Franz; and Theurer, Josef,3,629,583.
Thexton, Melvin W.; and Schaub, Stanley R., to Pioneer Magnetics, Inc. Transient analyzer. 3,629,852, Cl. 340-172.5
Thiele, William C.; Barger, Charles H.; Thomas, Joseph J.; and Hucks, Robert T., Jr., to Johns-Manville Corporation. Method of bonding epoxy resins to polyvinyl chloride. 3,628,991, Cl. 117-72.
Thiers, Robrecht Julius: *See—*
De Keyser, Lodewijk Felix; Herbots, Joseph Antoine; and Thiers, Robrecht Julius,3,629,054.
Thoma, Paul J.: *See—*
Means, John A.; Latimer, Kenneth B.; Moran, James; and Thoma, Paul J.,3,628,589.
Thomas & Betts Corporation: *See—*
Mates, Constantine George; and Burkert, Herbert G., 3,628,245.
Thomas, Billy L.: *See—*
Bradbury, Harold M.; Loeffler, Robert I.; Lott, Jerry L.; and Thomas, Billy L.,3,628,343.
Thomas, Iran L., to United States of America, Atomic Energy Commission. Method for exchanging counterions in actinide oxide sols. 3,629,138, Cl. 252-301.1
Thomas, John R., to Livingston Irrigation & Chemical Co., mesne. Mobile irrigation apparatus. 3,628,729, Cl. 239-177.
Thomas, Joseph J.: *See—*
Thiele, William C.; Barger, Charles H.; Thomas, Joseph J.; and Hucks, Robert T., Jr.,3,628,991.
Thomas, Roy L., Jr., to Charles Supper Co., Inc. Goniometer head for X-ray diffraction apparatus with improved X or Y-motion mechanism. 3,628,761, Cl. 248-184.
Thompson, John Stewart, to Bell Telephone Laboratories, Incorporated. Time-versus-location pathfinder for a time division switch. 3,629,846, Cl. 340-172.5
Thompson, Robert I. Educational toy device. 3,628,261, Cl. 35-70.
Thorborg, Kjeld, to Allmanna Svenska Elektriska Aktiebolaget. Direct current convertor for DC supply with extinguishing circuit. 3,629,673, Cl. 321-45.
Thornhill, Richard A.: *See—*
Aichenegg, Paul C.; and Thornhill, Richard A.,3,629,375.
Thurnell, Orville D., to Motorola Inc. VHF-UHF tuner mechanism for television receivers. 3,629,708, Cl. 325-461.
Tiberi, Robert: *See—*
Rausser, Richard; and Tiberi, Robert,3,629,303.
Tiger Plastics N.V. Industrieterrein: *See—*
Nijhuis, Hendrik Johannes Antonius, 3,628,442.
Tikanen, William A.; and Hering, John H., to Genisco Technology Corporation. Accelerometer. 3,628,383, Cl. 73-516.
Tilmann, Hans-Peter; and De Vuyst, Hugo Richard N., to Burndy Corporation. Electrical connect or particularly for printed circuits. 3,629,809, Cl. 339-176.
Time Incorporated: *See—*
Means, John A.; Latimer, Kenneth B.; Moran, James; and Thoma, Paul J., 3,628,589.
Murray, Margaret H.; and Leekley, Robert M., 3,628,962.
Timin, Mitchell E., to United States of America, Army, mesne. Mechanical spherical triangle computer. 3,628,250, Cl. 33-15.
Timken Company, The: *See—*
Otto, Dennis L., 3,628,837.
Tlaker, Erich, to Fellows Gear Shaper Company, The. Forming tool. 3,628,359, Cl. 72-76.
Toagosei Chemical Industry Co., Ltd.: *See—*
Itakura, Jo; Tanaka, Hisao; and Ito, Hiroo, 3,629,349.
Todd, Chester F., to Southwire Company. Long life spout. 3,628,706, Cl. 222-567.
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Method for diffusing an impurity substance into silicon carbide. 3,629,011, Cl. 148-1.5
Tokico Ltd.: *See—*
Hayakawa, Ken; and Tamada, Mitsuaki, 3,629,858.
Tokyo Keiki Seizosho Co., Ltd.: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro, 3,629,856.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kimura, Yoshiaki; Sano, Yoshiharu; Kumazawa, Ryoji; and Hisayasu, Yokohama, 3,629,024.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Tomita, Takehiko, 3,628,563.
Tom, Ho Yet: *See—*
United States of America,National Aeronautics and Space Administration, Administrator, 3,629,161.
Tomita, Fujihiko: *See—*
Tanaka, Kenzo; and Tomita, Fujihiko,3,628,619.
Tomita, Kazuo: *See—*
Takahi, Yukiyoshi; Tomita, Kazuo; and Oka, Hidehiko,3,629,430.
Tomita, Takehiko, to Tokyo Shibaura Electric Co., Ltd. Explosion detecting means for a fluid pipe line. 3,628,563, Cl. 137-460.
Tomomatsu, Hideo, to Jefferson Chemical Company, Inc. Cleaving poly(alkylene oxides) with acid anhydrides. 3,629,325, Cl. 260-496.
Toray Industries, Inc.: *See—*
Tsuji, Jiro; and Kajimoto, Tsunesuke, 3,629,286.
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo, 3,629,180.
Torba, Florence E., to Dow Chemical Company, The. Cyanofluoropyridines and fungicidal compositions, and methods for using the same. 3,629,424, Cl. 424-263.
Toroptseva, Tatyana Nikolaevna: *See—*
Kargin, Valentin Alexeevich; Cherneva, Elena Pavlovna; Ignatovich, Tatyana Danilovna; Tunitsky, Nikolai Nikolaevich; and Toroptseva, Tatyana Nikolaevna,3,629,082.
Torr laboratories, Incorporated: *See—*
De Lucia, Victor E., 3,629,746.
Torres, Anibal: *See—*
Stephens, Charles R., Jr.; and Torres, Anibal,3,628,970.
Toussaint, Norbert Francis, to Florasynth, Inc. Two-stage solvent drying of foods. 3,628,967, Cl. 99-103.
Townsend, Alexander Arthur, to A.P.V. Company Limited, The. Storage tanks. 3,628,687, Cl. 220-44.
Townsend, Raymond L.: *See—*
Kester, Jack R.; Multhaup, Ray D.; Roberts, William R.; Townsend, Raymond L.; and Young, Kenneth A.,3,629,547.
Toyama Chemical Co., Ltd.: *See—*
Kodama, Yutaka; Kodama, Tsutomu; and Nakabayashi, Masao, 3,629,378.
Toyo Roshi Company, Limited: *See—*
Hara, Shoji, 3,629,098.
Toyoda Koki Kabushiki Kaisha: *See—*
Kobayashi, Akiyoshi; and Nomura, Kikujiro, 3,628,293.
Toyoda, Kozo; and Akatu, Katutosi, to Hitachi, Ltd. Method of making a wound core and apparatus therefor. 3,628,241, Cl. 29-605.
Toyoseito Kabushiki Kaisha: *See—*
Suzuki, Kiyoshi, 3,629,003.
Tractor, Inc.: *See—*
Anthony, Albert M., 3,629,752.

Trassl, Werner; Engelke, Wilhelm; and Remberg, Axel, to Siemens Aktiengesellschaft. Multi-shell axial turbine, preferably steam turbine for high pressures and temperatures. 3,628,878, Cl. 415-108.

Trautman, George H., Jr.: *See—*
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr.,3,628,360.

Trautvetter, Werner: *See—*
Bier, Gerhard; Trautvetter, Werner; and Weisgerber, Gregor,3,629,218.

Trenner, Idamae G.: *See—*
Silber, Robert H.; Kelley, Kane L.; and Trenner, Idamae G.,3,629,412.

Trepka, Robert D.: *See—*
Harrington, Joseph Kenneth; and Trepka, Robert D.,3,629,332.

Tribe, George William: *See—*
Kanarek, Alexander David; and Tribe, George William,3,629,470.

Trigitronics of Connecticut, Inc.: *See—*
Reynolds, Frank L.; Langer, Alfred C.; and Tweedie, Ellsworth, 3,629,786.

Trimex Corporation: *See—*
Milner, Maclin R., 3,628,925.

Trindle, Joseph W. Remote control circuits. 3,629,608, Cl. 307-140.

Triplex Safety Glass Co., Ltd.: *See—*
Hinton, Brian J.; and Kite, Kenneth F., 3,629,040.

Trolin, George Teodor, to Allmanna Svenska Elektriska Aktiebolaget. High voltage isolator with contact turning about a vertical axis. 3,629,531, Cl. 200-48.

Trombetta, Adam: *See—*
Schafer, Gustav; and Trombetta, Adam,3,629,248.

Troxler, Eduard: *See—*
Hausermann, Heinrich; and Troxler, Eduard,3,629,417.

True Temper Corporation: *See—*
Holahan, Joseph M., 3,629,029.

Trutner, Donald G., to Duro-Test Corporation. Glass tube forming machine. 3,628,939, Cl. 65-276.

TRW Inc.: *See—*
Dymond, Richard Warren, 3,628,423.
Zivi, Samuel M., 3,629,064.

Tsuji, Jiro; and Kajimoto, Tsunesuke, to Toray Industries, Inc. Bisphthalimidines. 3,629,286, Cl. 260-325.

Tsujimoto, Yoshinobu: *See—*
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu,3,629,011.

Tsurumi, Nariyoshi, to Hitachi Shipbuilding and Engineering Co., Ltd. Joint between H-shaped members and method for producing the joint. 3,628,300, Cl. 52-721.

Tucker, Linwood G., to Koppers Company, Inc. Coal feeding system for mechanical feed type larry car. 3,628,676, Cl. 214-35.

Tung, Ching C.; and Powers, Jack F., to Monsanto Company. Method of controlling the growth of plants. 3,628,946, Cl. 71-103.

Tunitsky, Nikolai Nikolaevich: *See—*
Kargin, Valentin Alexeevich; Cherneva, Elena Pavlovna; Ignatovich, Tatyana Danilovna; Tunitsky, Nikolai Nikolaevich; and Toroptseva, Tatyana Nikolaevna,3,629,082.

Turner, Harry E.: *See—*
Bailey, James A.; and Turner, Harry E.,3,628,827.

Turner, John Cameron: *See—*
Hough, Leslie; Turner, John Cameron; and Lewis, Anthony William,3,629,231.

Tushaus, Leonard A., to Ashland Oil & Refining Company. Novel dialkyl sulfoxide-organo metallic co-catalyst system and the polymerization of epoxides therewith. 3,629,160, Cl. 260-2.

Tweco Products, Inc.: *See—*
Kester, Jack R.; Multhaup, Ray D.; Roberts, William R.; Townsend, Raymond L.; and Young, Kenneth A., 3,629,547.

Tweedie, Ellsworth: *See—*
Reynolds, Frank L.; Langer, Alfred C.; and Tweedie, Ellsworth,3,629,786.

Tyler, Hugh J., to Robertshaw Controls Company. Proximity switch. 3,629,678, Cl. 318-558.

Typrowicz, Wladyslaw; and Springer, Otto M., to Kamborian, Jacob S. Machine for performing work along a selected portion of the periphery of a workpiece. 3,628,208, Cl. 12-20.

Tytell, Alfred A.: *See—*
Lampson, George P.; Field, Arthur K.; and Tytell, Alfred A.,3,629,235.

UBE Industries, Ltd.: *See—*
Yamada, Keisho; Nagai, Shigeki; Odan, Kyoji; and Hidaka, Mikio, 3,629,317.

Uchigaki, Taku: *See—*
Masuda, Kohei; Uchigaki, Taku; and Arai, Masakazu,3,629,037.

Uchisaka, Tsunehiko; and Akaishi, Mineichi. Multiblade ventilator. 3,628,887, Cl. 416-187.

Uhland, Keith L., to Du Pont de Nemours, E. I., and Company. Process for recovering titanium tetrachloride from titaniferous ore. 3,628,913, Cl. 23-87.

Ukigaya, Tadashi: *See—*
Nakamoto, Atsushi; Ogawa, Keizabuto; and Ukigaya, Tadashi,3,629,393.

Ulion, Nicholas E.: *See—*
Blecherman, Sol S.; and Ulion, Nicholas E.,3,628,994.

Ulmschneider, Dieter: *See—*
Hille, Martin; and Ulmschneider, Dieter,3,629,101.

Ulrich, Werner, to Bell Telephone Laboratories, Incorporated. Scanner control circuit for a program controlled communication switching system. 3,629,851, Cl. 340-172.5

Ultrasonic Systems, Inc.: *See—*
Suroff, Leonard W., 3,628,789.

Underwood, Milton Dean: *See—*
Pedersen, Richard Alan; Reed, Ray Allen; and Underwood, Milton Dean,3,629,609.

Union Camp Corporation: *See—*
Wright, Ernest C., 3,628,842.

Union Carbide Corporation: *See—*
Bailey, Donald L.; and Pater, Anton S., 3,629,308.
Bailey, Donald L.; and Jex, Victor B., 3,629,309.
Bailey, Donald L.; and O'Connor, Francis M., 3,629,310.
Bennett, Roswell J., 3,629,009.
Brotherton, Thomas K.; and Lynn, John W., 3,629,200.
Lundberg, Robert Dean; Del Giudice, Frank Paul; and Kelso, Robert Gladden, 3,629,374.
Soldatos, Anthony C., 3,629,084.
Soldatos, Anthony C., 3,629,361.
Soldatos, Anthony C., 3,629,364.

Uniroyal, Inc.: *See—*
Courduvelis, Constantine I.; and Brett, Thomas J., Jr., 3,629,348.
Von Schmeling, Bogislav; Davis, Robert A.; and Relyea, Douglas I., 3,629,438.

Unistrut Corporation: *See—*
Henry, Herbert J., 3,628,296.

United Aircraft Corporation: *See—*
Blecherman, Sol S.; and Ulion, Nicholas E., 3,628,994.
Marroni, Michael A., Jr.; and Getchell, Douglas E., 3,628,189.
Mulready, Richard C.; and Creslein, William E., III, 3,628,836.

United States Banknote Corporation: *See—*
Eberly, David H., Jr., 3,628,454.

United States of America: *See—*
Munt, Irwin, 3,629,653.

United States of America
Agriculture: *See—*
Knoepfler, Nestor B.; and Koenig, Paul A., 3,629,052.
Air Force: *See—*
Frankel, Milton B.; and Ogimachi, Naomi N., 3,629,324.
Houston, John M., 3,629,063.
Army: *See—*
Baumgartner, Frederick N., 3,628,927.
Carter, John L.; and McGowan, Joseph W., 3,629,735.
Curchack, Herbert D., 3,628,638.
Firester, Arthur H., 3,629,601.
Firester, Arthur H., 3,629,602.
Glendinning, William B.; and Mark, Albert, 3,629,016.
Goubau, Georg J. E., 3,628,861.
Heiffer, Melvin H.; and Jacobus, David P., 3,629,410.
Hersh, Herbert N., 3,629,100.
Johnson, Richard N., 3,628,268.
Kilduff, Timothy J., 3,629,007.
Lamb, James J., 3,629,698.
McClure, Bill M.; Berky, John J.; and Savage, George R., 3,629,639.
McNeill, William, 3,629,591.
Meeks, Albert D., 3,628,633.
Puckett, Lawrence J.; Teague, Marion Warfield; and McCoy, Donald G., 3,628,347.
Robertson, Louis A., 3,628,915.
Ross, Lester M., Sr.; and Stripling, William W., 3,628,385.
Schneider, Sol, 3,629,659.
Starkey, George W., 3,628,868.
Timin, Mitchell E., 3,628,250.
Willett, Colin S., 3,629,580.
Zangrando, Roy A., 3,628,355.
Atomic Energy Commission: *See—*
Knox, William M., 3,629,065.
Maletskos, Constantine J.; and Tang, Chung-Wai, 3,629,132.
McBride, John P.; McCorkle, Kenneth H.; and Pattison, William L., 3,629,133.
Muenchow, Herbert O., 3,629,062.
Noyes, Richard C.; and Andrews, Mena G., 3,629,061.
Rhodes, Donald W., 3,629,134.
Stankiewicz, Raymond S., 3,629,070.
Thomas, Iran L., 3,629,138.
Wilding, Malcolm W., 3,629,135.
Health, Education and Welfare: *See—*
Staba, Emil John; and Kaul, Balkrishena, 3,628,287.
Interior: *See—*
Gorin, Everett; Struck, Robert T.; and Kulik, Metro D., 3,629,159.
Wentworth, Bernard C., 3,629,390.
National Aeronautics and Space Administration, Administrator, with respect to an invention of:
Moacanin, Jovan, and Tom, Ho Yet. Ionene membrane separator. 3,629,161, Cl. 260-2.1
National Aeronautics and Space Administration: *See—*
Lantz, Edward; and Davison, Harry W., 3,629,068.
Navy: *See—*
Andrews, Ronald A., 3,629,603.
Kaufman, Martin H.; and O'Drobinak, John D., 3,629,020.
Reece, Asa M., 3,628,821.

Regan, Edgar P., Jr., 3,628,378.
Sands, Emmett J.; and Von Beckmann, Helmuh Rolf Erich, 3,628,458.
Schwee, Leonard J., 3,629,520.
Wall, Leo A.; and Antonucci, Joseph M., 3,629,340.

United States Steel Corporation: *See—*
Becker, Ronald F.; Hanna, Ralph T.; and Waterhouse, Ernest L., 3,628,509.
Fenstermaker, Lloyd J., 3,628,364.
Kennedy, Frank, 3,628,778.
Laudien, Helmut F.; and Smith, Eugene E., 3,628,374.
Polutnik, Frank J.; and West, Robert W., 3,628,728.

Universal Oil Products Company: *See—*
Gaydasch, Alexander, 3,628,928.
Jones, Edwin K., 3,629,076.
McLarty, Jack Lowrie; Hayes, Charles M.; and Latos, Edwin J., 3,629,028.
Sparks, Allen K., 3,629,190.
Stout, David A., 3,628,467.

Universal Products Corporation: *See—*
Lattin, Leroy E.; and Byberg, Bjarne I., 3,628,247.

University of Rhode Island: *See—*
Yates, Vance J.; and Mancini, Lawrence O., 3,629,396.

University of Southern Illinois Foundation: *See—*
Shechmeister, Isaac L.; Kolar, Joseph R., Jr.; and Kamlade, William G., Jr., 3,629,413.

Upjohn Company, The: *See—*
Argonudelis, Alexander D.; De Boer, Clarence; Eble, Thomas E.; and Herr, Ross R., 3,629,406.
Huber, Joel E., 3,629,299.
Moon, Malcolm W., 3,629,419.
Sebek, Oldrich K.; and Whaley, Howard A., 3,629,402.
Sekhar, Neelkant C., 3,629,071.
Van Rheenen, Verlan H., 3,629,298.

Urbanosky, Harold J., to Schlumberger Technology Corporation. Control valves for well tools. 3,628,569, Cl. 137-625.3

Urbaschat, Gertrud Emma Maria Gerda: *See—*
Frohberger, Paul-Ernst; Kuhle, Engelbert; and Urbschat, Otto Ewald,3,629,446.

Urbonas, Vacys: *See—*
Allen, Robert J.; Martin, Philip C.; and Urbonas, Vacys,3,628,698.

Urbschat, Ewald; and Frohberger, Paul-Ernst, to Farbenfabriken Bayer Aktiengesellschaft. Benzohydroxamic acid fungitoxi agents. 3,629,456, Cl. 424-324.

Urbschat, Otto Ewald: *See—*
Frohberger, Paul-Ernst; Kuhle, Engelbert; and Urbschat, Otto Ewald,3,629,446,

U.S. Philips Corporation: *See—*
Barten, Piet Gerard Joseph; and VanNes, Johannes Cornelis Adrianus, 3,628,429.
Brun, Roger, 3,629,506.
Carlson, Allan Ivan, 3,629,499.
Cense, Adriaan, 3,629,501.
Desvignes, Francois; Guiochon, Paul; and Pompei, Jean, 3,629,585.
Fastre, Joseph Jules Jacques, 3,628,716.
Greefkes, Johannes Anton; Riemens, Karl; Korevaar, Geerlof Jan; and Van Dijk, Leonardus Petrus Josef, 3,629,619.
Hetterscheid, Wilhelmus Theodorus Hendrikus; and Van Schaik, Gerrit Pieter Johannes, 3,629,686.
Le Poole, Jan B., 3,629,578.
Rakels, Christiaan Johannes, 3,629,575.
Smeulers, Wouter, 3,629,500.
Van De Water, Peter Wilhelmus Maria, 3,629,672.
Vos, Hendricus Elise Michel Cornelus, 3,628,591.
Zegers, Leo Eduard; Snijders, Wilfred Andre Maria; and Kuilman, Han, 3,629,505.

Uskach, Alexandr Grigorievich: *See—*
Kuznestsov, Rostislav Sergeevich; Uskach, Alexandr Grigorievich; and Kostikov, Vladimir Grigorievich,3,629,533.

Uskokovic, Milan Radoje: *See—*
Grethe, Guenter; Lee, Hsi Lin; and Uskokovic, Milan Radoje,3,629,265.

Uzu, Keizo; Nakano, Kinichi; and Takahashi, Toshinaka, to Kyowa Hakko Kogyo Kabushiki Kaisha. Derivatives of decarbamoyl mitomycin. 3,629,283, Cl. 260-326.3

Vacu-Blast Corporation: *See—*
Arnold, Ted A., 3,628,627.

Vaczi, Lajos: *See—*
Benko, Pal; Pallos, Laszlo; Vaczi, Lajos; Komlos, Endre; and Ordogh, Ferenc,3,629,334.

Valentino, James A.: *See—*
Brown, Benjamin W.; and Valentino, James A.,3,629,715.

Valukonis, Jonas, to Ford Motor Company. Finned energy absorber. 3,628,634, Cl. 188-1.

Van Baush, Edward Harold: *See—*
Meisler, Joseph; Van Baush, Edward Harold; and Banikiotes, Gregory Christ,3,628,340.

Van Brakel, Russel A., to Haverberg Auto Laundry Equipment Co., Inc. Wheel washer assembly. 3,628,212, Cl. 15-21.

Van Brimer, Russell H., to Mead Corporation. Air bearing for optical reader. 3,629,593, Cl. 250-219.

Van de Kerkhof, Lodevicus Lambertus Johannes, to AMP Incorporated, mesne. Apparatus for crimping electrical connectors to wires. 3,628,228, Cl. 29-203.

Van De Water, Peter Wilhelmus Maria, to U.S. Philips Corporation. Semiconductor device having an improved heat sink arrangement. 3,629,672, Cl. 317-234.

Van Den Ouweland, Godefridus Antonius Maria: *See—*
Peer, Hendricus Gerardus; and Van Den Ouweland, Godefridus Antonius Maria,3,629,293.

Van Der Lely, Cornelis; and Nieuwenhoven, Hendricus Jacobus Cornelis. Variable ratio transmissions. 3,628,390, Cl. 74-230.17

Van Der Veen, Romke, to N.V. Ingenieursbureau voor Systemen en Octrooien 'Spanstaal'. Pressure differential measuring means for suction dredging instruments. 3,628,263, Cl. 37-58.

Van Dijk, Leonardus Petrus Josef: *See—*
Greefkes, Johannes Anton; Riemens, Karl; Korevaar, Geerlof Jan; and Van Dijk, Leonardus Petrus Josef,3,629,619.

Van Doren, Lawrence: *See—*
Yalof, Stanley A.; and Van Doren, Lawrence,3,629,700.

Vanguard Corporation: *See—*
Van Moss, John H., Jr., 3,628,464.

Van Langenhoven, Jules E., to Engineering Developments Limited. Cylindrical breech with sleeved obturator. 3,628,272, Cl. 42-39.5

Van Moss, John H., Jr., to Vanguard Corporation. Elastomeric railway car side bearing. 3,628,464, Cl. 105-199.

VanNes, Johannes Cornelis Adrianus: *See—*
Barten, Piet Gerard Joseph; and VanNes, Johannes Cornelis Adrianus,3,628,429.

Van Ness, William C., to Singer Company, The. Loose stitch forming mechanism for lock stitch sewing machines. 3,628,480, Cl. 112-181.

Vannest, James L., to Textron Inc. Roller bearing retainer. 3,628,839, Cl. 308-217.

Vannus, Tom H., to Hamilton Company. Automatic septum changing mechanism. 3,628,382, Cl. 73-422.

Van Pool, Joe, to Phillips Petroleum Company. Polymerized decant oil and asphalt product containing the same. 3,628,975, Cl. 106-279.

Van Rheenen, Verlan H., to Upjohn Company, The. Steroidol 3-keto-Δ^1,-diene 3-enamines. 3,629,298, Cl. 260-397.1

Van Schaik, Gerrit Pieter Johannes: *See—*
Hetterscheid, Wilhelmus Theodorus Hendrikus; and Van Schaik, Gerrit Pieter Johannes,3,629,686.

Van Veelen, George Frans: *See—*
Riebel, Aexander; Himmelmann, Wolfgang; Meyer, Karl-Otto; and Van Veelen, George Frans,3,628,961.

Vartiak, Joseph F., to Nalco Chemical Company. Herbicidally active compositions. 3,628,942, Cl. 71-92.

Vely, Victor G.: *See—*
Litchfield, John H.; and Vely, Victor G.,3,629,395.

Verbeck, George J.: *See—*
Greening, Nathan R.; Copeland, Llewellyn E.; and Verbeck, George J.,3,628,973.

Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Hinterholzl, Ernst, 3,628,365.

Vermeulen, Emile Raymond, to Sidaplax N.V. Closuring containers. 3,628,301, Cl. 53-14.

Vernon Tool Co., Ltd: *See—*
Blackburn, Marvin J.; and Corwin, Harry L., 3,628,227.

Veron, Harry; and Carey, Richard Allan, Sr., to Sperry Rand Corporation. Plasma display device with internal-external electrode structure. 3,629,638, Cl. 313-109.5

Verrier, Jean: *See—*
Florent, Jean Edmond Marie; Mancy, Denise; and Verrier, Jean,3,629,404.

Versitron, Inc.: *See—*
Case, Alfred L., 3,629,590.

Verson Allsteel Press Company: *See—*
Luenser, Kurt K., 3,628,357.

Verti-Dynamics: *See—*
Nagler, Bruno, 3,628,755.

Vetter, Hans: *See—*
Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald,3,628,952.

Vicari, Vincent. Soap mixer and dispenser for shower baths and the like. 3,628,732, Cl. 239-310.

Vilim, Robert P.; and Bell, Harvey, to National Starch and Chemical Corporation. Starch-milk systems stabilized with a blend of hydroxyalkyl starch and carrageenan. 3,628,969, Cl. 99-139.

Vincent, Samuel Anderson; Monds, Fabian Charles; and Armstrong, David Roger, to National Research Development Corporation. Apparatus for stimulating muscles controlled by the same muscles. 3,628,538, Cl. 128-422.

Vinogradova, Svetlana Vasilievna: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.

Visconti, Ottorino. Automatic band polishing machine. 3,628,291, Cl. 51-148.

Vistron Corporation: *See—*
Bedighian, Leon B., 3,629,169.

Vit, Jaroslav, to National Patent Development Corporation. Purification of aprotic solvents. 3,629,288, Cl. 260-345.1

Vogel, Charles B., to Shell Oil Company. Well logging. 3,629,832, Cl. 340-15.5

Vogel, Christian: *See—*
Berrer, Dagmar; and Vogel, Christian,3,629,256.
Berrer, Dagmar; and Vogel, Christian,3,629,257.
Berrer, Dagmar; and Vogel, Christian,3,629,258.

Volker, Theodor; and Hugener, Hanspeter, to Lonza Ltd.Process for the manufacture of poly-β-alanine comprising reacting acrylonitrile with formic acid. 3,629,203, Cl. 260-78.

Von Beckmann, Helmuh Rolf Erich: *See—*
Sands, Emmett J.; and Von Beckmann, Helmuh Rolf Erich,3,628,458.

Von Beckmann, Helmuth Rolf Erich. Combined tie and rail gripper. 3,628,460, Cl. 104-8.

Von Schmeling, Bogislav; Davis, Robert A.; and Relyea, Douglas I., to Uniroyal, Inc. Benzothiophene-1,1-dioxide derivatives as fungicides and bactericides. 3,629,438, Cl. 424-275.

Vora, Madhukar B.: *See—*
Lubart, Neil D.; and Vora, Madhukar B.,3,629,667.

Vos, Hendricus Elise Michel Cornelus, to U.S. Philips Corporation. Method of manufacturing a material that reacts with air in an inert atmosphere. 3,628,591, Cl. 164-63.

Voss, Raymond G., to Phillips Petroleum Company. Apparatus for dielectric testing of containers having an expandable capacitive electrode. 3,629,699, Cl. 324-61.

Vossos, Peter H., to Nalco Chemical Company. Silica organosols and process for making. 3,629,139, Cl. 252-309.

Vsesojuzny Nauchno-Issledovatelsky Institut Neftekhimicheskikh Protsessov: *See—*
Levin, Semen Zakharovich; and Shapiro, Aron Leibovich, 3,629,343.

Vygodsky, Yakov Semenovich: *See—*
Korshak, Vasily Vladimirovich; Gribova, Irina Alexandrovna; Krasnov, Alexandr Petrovich; Chumaevskaya, Alla Nikolaevna; Natsarenus, Olga Svyatoslavovna; Vinogradova, Svetlana Vasilievna; Vygodsky, Yakov Semenovich; Pankratov, Vyacheslav Alexandrovich; and Slonimsky, Grigory Lvovich,3,629,103.

Wacker-Chemie G.m.b.H.: *See—*
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,629,359.

Waggener, Donnell E.: *See—*
Kirkpatrick, Maurice; and Waggener, Donnell E.,3,628,605.

Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J., to Eastman Kodak Company Eastman Kodak Company. Apparatus for monitoring rewind in a motion picture projector Apparatus for monitoring rewind in a motion picture projector Apparatus for monitoring rewind in a motion picture projector. 3,628,750, Cl. 242-186.

Waggershauser, Herman H.: *See—*
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.
Waggershauser, Harman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; Bundschuh, John J.; Waggershauser, Herman H.; Boon, Joseph L.; and Bundschuh, John J.,3,628,750.

Wagner Electric Corporation: *See—*
Demas, Nickolas P., 3,629,642.

Wagner-Jauregg, Theodor; and Fitz, Egon, to Siegfried Aktiengesellschaft. Fluorinated 1,2-dihydro-1,2,4-benzotriazines. 3,629,253, Cl. 260-247.2

Wagner Research Corporation: *See—*
Flanagan, Thomas L., 3,628,476.

Wahlgren, Wallace W.: *See—*
Douglas, Ellwood S.; and Wahlgren, Wallace W.,3,629,759.

Wakamatsu, Katsuhiko. Dispensing container. 3,628,703, Cl. 222-454.

Wakeman, Reginald L.; Petrocci, Alfonso N.; and Prodo, Kenneth W., to Millmaster Onyx Corporation. Quaternay ammonium compounds. 3,629,462, Cl. 424-329.

Wakimura, Atsushi: *See—*
Arasaki, Seitetsu; Wakimura, Atsushi; Yamamoto, Hisao; and Inaba, Shigeho,3,629,238.

Walchli, Herman Henry, Jr.: *See—*
Waterbury, Walter Edward; Barnes, Alice Cheryl; and Walchli, Herman Henry, Jr.,3,629,397.

Walding, Eugene C., to Oak Electro/Netics Corporation. Back-to-back oscillator switching arrangement. 3,629,722, Cl. 331-48.

Walker, George E., to Monsanto Company. Process for manufacturing tough plastic articles of manufacture. 3,629,381, Cl. 264-92.

Walker, Lynn P.: *See—*
Reitsema, Robert H.; and Walker, Lynn P.,3,629,353.

Walker, Neil Edward, to Electronic Communications, Inc. High-efficiency modulation circuit for switching- mode audio amplifier. 3,629,616, Cl. 307-254.

Wall, Leo A.; and Antonucci, Joseph M., to United States of America, Navy. Synthesis of perfluoroparacresol, polyoxyper- fluorobenzylene and related monomers and polymers. 3,629,340, Cl. 260-623.

Waller, Duncan E., to Dentsply International Inc.Dental compositions containing adduct of 2,2'- propane bis 3-(4-phenoxy)-1,2-hydroxy propane-1- methacrylate and isocyanate. 3,629,187, Cl. 260-41.

Walles, Wilhelm E., to Dow Chemical Company, The. Process for sealing polyolefin containers. 3,629,025, Cl. 156-69.

Walling Dean D.; and Rowan, Preston D., to Mechanical Products. Circuit breaker. 3,629,763, Cl. 337-66.

Walling, Dean D., to Mechanical Products. Circuit breaker. 3,629,762, Cl. 337-62.

Wals, Inc.: *See—*
Wenger, Harvey M.; and Archer, Norman E., 3,628,666.

Walter, George R.: *See—*
Manowitz, Milton; Walter, George R.; and Foris, Stephen A.,3,629,465.

Walters, Ronnie G., to Allen-Bradley Company, mesne. Method and apparatus for determining angular velocity. 3,629,705, Cl. 324-173.

Walters, William J.; Rusnack, John G.; and Chen, Peter P. D., to Bendix Corporation, The. Environmental seal for an electrical switch. 3,629,535, Cl. 200-168.

Wang, Teh Po, to Driver, Wilbur B., Company. Thermocouple extension wire. 3,628,949, Cl. 75-159.

Wankel GmbH: *See—*
Lechler, Rolf; and Leitermann, Wulf, 3,628,900.

Waring, Wilson Shaw, to Imperial Chemical Industries Limited. Compositions and methods for reducing serum cholesterol and esterifies fatty acids. 3,629,453, Cl. 424-320.

Warkentin, Aaron James. Automatic distribution system for fruit employing tiltable conveyor belt. 3,628,653, Cl. 198-81.

Warner, Allan S. Manufacture of wire terminals. 3,629,542, Cl. 219-79.

Warwick Electronics Inc.: *See—*
Massa, Dominick A., 3,629,751.

Wasley, Jan W. F., to Geigy Chemical Corporation. 2-(4-Halo- and 4-trifluoromethylphenyl- sulfonamido) phenylacetic acids and esters thereof. 3,629,320, Cl. 260-470.

Wasley, Jan W. F.: *See—*
Gruenfeld, Norbert; and Wasley, Jan W. F.,3,629,450.

Watanabe, Hikoitsu; and Genma, Sanju. Driven coiled ground. 3,629,485, Cl. 174-7.

Watanabe, Takeshi; Yoshida, Masatsugu; Akutagawa, Takaichi; and Noguchi, Shiro, to Mitsui Toatsu Chemicals, Incorporated. Process for producing improved impact-resistant polystyrene films. 3,629,387, Cl. 264-209.

Watanabe, Tetsuro: *See—*
Seki, Shigeo; Sekizawa, Yasuharu; Nishibata, Ken; Watanabe, Tetsuro; Kikuchi, Takahiko; and Igarashi, Hiroshi,3,629,428.

Watano, Yutaka, to Nippon Kogaku K.K. Sliding thin film resistance for measuring instruments. 3,629,776, Cl. 338-140.

Waterbury, Walter Edward; Barnes, Alice Cheryl; and Walchli, Herman Henry, Jr., to Miles Laboratories, Inc. Therapeutic and diagnostic allergenic extracts and process for preparing same. 3,629,397, Cl. 424-91.

Waterhouse, Ernest L.: *See—*
Becker, Ronald F.; Hanna, Ralph T.; and Waterhouse, Ernest L.,3,628,509.

Watson, Alexander Smith: *See—*
Starkey, Bertrand Julian; and Watson, Alexander Smith,3,628,205.

Waybright, George Cleveland, to Sylvania Electric Products Inc. High voltage regulation and protection circuit. 3,629,644, Cl. 315-22.

Weaver, John J., to Shell Oil Company. Water-in-oil emulsions. 3,629,119, Cl. 252-77.

Weber, Carl D., to Dow Corning Corporation. Polydimethylsiloxane release agent. 3,628,996, Cl. 117-138.8

Weber, Georges R., 50% to Research Development Techniques, Inc. Irradiation device. 3,628,445, Cl. 99-277.1

Weber, Ronald A.: *See—*
Larralde, Edward; Weber, Ronald A.; Hanes, James W. E.; and Childers, Thomas W.,3,628,812.

Weber, Ulrich; and Gullasch, Jurgen, to Siemens Aktiengesellschaft. Method and apparatus for producing a stereo image by electron microscopy. 3,629,577, Cl. 250-49.5

Weber, Walter; and Templin, Herbert. Sulky. 3,628,806, Cl. 280-63.

Webster, Owen Wright, to Du Pont de Nemours, E. I., and Company. Synthesis of diaminomaleonitrile from hydrogen cyanide as catalyzed by cyanogen or diiminosuccinonitrile. 3,629,318, Cl. 260-465.5

Wegehaupt, Karl-Heinrich: *See—*
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich,3,629,359.

Wegler, Richard: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth,3,629,275.

Wei, Peter H. L.: *See—*
Bell, Stanley C.; and Wei, Peter H. L.,3,629,262.

Weil, Edward D.: *See—*
Greenbaum, Sheldon B.; Gelfand, Samuel; and Weil, Edward D.,3,629,421.

Weimann, Klaus: *See—*
Sattler, Gunter; and Weimann, Klaus,3,628,294.

Weinberg, Norman Louis, to American Cyanamid Company. Electrochemical mercuration or organic compounds. 3,629,080, Cl. 204-72.

Weinberger, Arnold: *See—*
Schmookler, Martin S.; and Weinberger, Arnold,3,629,565.

Weiner, Murray, to Geigy Chemical Corporation. Antiulcerogenic composition and methods utilizing 2-aminoethanethio-sulfuric acid. 3,629,432, Cl. 424-273.

Weinstein, Aaron; and Scourtas, Frank, to Pacesetter Products Inc. Shoe stiffener blanks comprising polyvinyl chloride, an impact modifier and a layer of heat activatible adhesive. 3,629,050, Cl. 161-64.

Weisgerber, Gregor: *See—*
Bier, Gerhard; Trautvetter, Werner; and Weisgerber, Gregor,3,629,218.

Weiss, David E. Strain level counter. 3,628,377, Cl. 73-91.

Weiss, Walter J., to Texaco Inc. Inhibiting scale formation. 3,629,105, Cl. 252-8.55

Weizenkorn, Horst Heinrich: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Dany, Franz-Josef; Steidl, Dieter; Weizenkorn, Horst Heinrich; and Forst, Willi,3,628,739.

Welch, Ruel E. Multi-vocal music system. 3,629,483, Cl. 84-1.16

Wells, Graham Melbourne; and Wooffindin, Frank, to Hopkinsons Limited. Safety valve having plural loading means. 3,628,553, Cl. 137-81.5

Wen, Cheng Paul, to RCA Corporation. Transmission line formed by a dielectric body having a metallized nonplanar surface. 3,629,737, Cl. 333-24.1

Wendt, Maria Susanne: *See—*
Liebe, Wolfgang; and Wendt, Maria Susanne,3,629,629.

Wenger, Harvey M.; and Archer, Norman E., to Wals, Inc. Filtering machine. 3,628,666, Cl. 210-370.

Wenskus, Herbert: *See—*
Lynch, John R.; Otten, Leonard E.; and Wenskus, Herbert,3,628,717.

Wenthe, Stephen J.: *See—*
Fessenden, John R.; and Wenthe, Stephen J.,3,628,864.

Wenthe, Stephen J.; and Shute, Charles F., to Eastman Kodak Company. Automatic dispenser and storage device for sheet film. 3,628,840, Cl. 312-35.

Wentworth, Bernard C., to United States of America, Interior. Avian specific, bio-affecting preparation and treatment method. 3,629,390, Cl. 424-2.

Wenz, Herbert; and Jehle, Fritz, to Pfaff, G. M., AG. Linkage device for coupling control bars on sewing machines. 3,628,482, Cl. 112-217.4

Werner, Hanne, to Foss, N., Electric A/S. Determining the fat content of milk. 3,628,916, Cl. 23-231.

Werner, John R.: *See—*
Hauck, Erwin A.; and Werner, John R.,3,629,854.

Wesener, Erich, to Buro Patent AG. Guidance system for self-propelled trackless carriages. 3,628,624, Cl. 180-98.

Wessendorf, Richard: *See—*
Nosler, Heinz Gunter; Bellinger, Horst; and Wessendorf, Richard,3,629,464.

West, Laurice J., to Microcom Corporation. Biological electrode amplifier. 3,628,527, Cl. 128-2.06

West, Robert W.: *See—*
Polutnik, Frank J.; and West, Robert W.,3,628,728.

Western Data Products, Inc.: *See—*
Orzechowski, Walter J.; Pace, Herbert D.; Osterberg, Bruce H.; Caldwell, William W.; and Murphy, Arthur J., 3,629,556.

Western Electric Company, Incorporated: *See—*
Graham, Charles Eckner; Lumley, Robert Miller; and Oberholzer, David James, 3,629,545.

Westinghouse Electric Corporation: *See—*
Bruning, Armin M., 3,628,948.
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., 3,629,553.
Findley, Joseph D., Jr., 3,629,747.
Maier, Alfred E.; Ricci, Louis N.; and Haugh, Charles E., 3,629,744.
Melamed, Nathan T.; Roland, George W.; and Hopkins, Richard H., 3,629,136.
Mierly, George M., Jr., 3,628,884.
Pearce, Henry A., Jr., 3,629,758.

Weston Instruments, Inc.: *See—*
Andreaggi, Joseph R.; and Zenuch, George, 3,629,808.

Westover, Robert F.: *See—*
Pohl, Karl-Heing; Spencer, Arthur G.; and Westover, Robert F.,3,628,243.

Weyerhaeuser Company: *See—*
Neitzke, Nicholas R., 3,628,469.

Whaley, Howard A.: *See—*
Sebek, Oldrich K.; and Whaley, Howard A.,3,629,402.

Wheatley, Carl Franklin, Jr., to RCA Corporation. Current source. 3,629,691, Cl. 323-1.

Whirlpool Corporation: *See—*
Sulcek, Charles E., 3,628,841.

White, Georganne C.: *See—*
Lozier, Walter W., 3,628,308.

White, Herschel T.: *See—*
Langer, Arthur W., Jr.; and White, Herschel T.,3,629,355.

White, Sheldon S., to Texas Instruments, Incorporated. Method of making header joint for a clad tubulation. 3,628,923, Cl. 29-157.4

Whitefin Holdings S.A.: *See—*
Teotino, Uberto; Della Bella, Davide; and Ferrari, Vittorio, 3,629,435.

Whitehead, David M.: *See—*
Desty, Denis H.; and Whitehead, David M.,3,628,735.

Whitlow, Billy W., to Martin-Marietta Corporation. Pulse selection system using pulse position to pulse amplitude conversion. 3,629,728, Cl. 332-1.

Whitman, Gary Horace. Submarine with remotely controlled diving and surfacing means. 3,628,281, Cl. 46-94.

Whitney, Donald R.: *See—*
Seitz, William R.; and Whitney, Donald R.,3,628,399.

Wicker, Thomas Hamilton: *See—*
Gilkey, Russell; and Wicker, Thomas Hamilton,3,629,202.

Wiechmann, Wayne C., to Fargo Mfg. Co., Inc. Midspan connector. 3,629,806, Cl. 339-116.

Wiegelmann, Hans; and Germann, Helmut. Infinitely variable speed belt transmission with conical pulleys. 3,628,389, Cl. 74-230.17

Wiener & Co. N.V.: *See—*
Nijkerk, Adolf Maurits, 3,628,965.

Wienert, Lester A.: *See—*
Buckman, Stanley J.; Flanagan, Kenneth J.; Pera, John D.; and Wienert, Lester A.,3,629,322.

Wiese, Joseph A., Jr., to Minnesota Mining and Manufacturing Company. Heat-sensitive copy sheet. 3,628,980, Cl. 117-36.8

Wiese, Winfred J., to Borg-Warner Corporation. Mechanical seal assembly with leakage control. 3,628,799, Cl. 277-27.

Wiggins, Leslie Frederick: *See—*
Gittos, Maurice Ward; James, John William; and Wiggins, Leslie Frederick,3,629,463.

Wiig, Chester M., to Littell, F. J., Machine Company. Scroll cutting and slitting machine with tension control means. 3,628,367, Cl. 72-324.

Wilcox, John D.: *See—*
Gibson, Robert G.; Greenberg, Allan; and Wilcox, John D.,3,629,848.

Wild, Walter J. Spraying device with hand-held spraying head. 3,628,875, Cl. 401-137.

Wilding, Malcolm W., to United States of America, Atomic Energy Commission. Method of dissolving radioactive contaminated organic ion exchange resins. 3,629,135, Cl. 252-301.1

Wiley, David; and Allport, Maurice James. Engine starting systems. 3,629,597, Cl. 290-37.

Wilhelm, Wilhelm, to Siemens Aktiengesellschaft. ECL logic circuit. 3,629,610, Cl. 307-218.

Wilke, Gunther; and Heimbach, Paul, to Studiengesellschaft Kohle m.b.H. Cyclocooligomerization to form multicyclic olefinic rings. 3,629,347, Cl. 260-666.

Willett, Colin S., to United States of America, Army. Method and apparatus for obtaining high resolution X-ray interference patterns. 3,629,580, Cl. 250-51.5

Williams, Donald F.; and Cox, Gerald H., to Fedders Corporation. Mounting hook. 3,628,762, Cl. 248-235.

Williamson, Dan G., to Butler Manufacturing Company. Tube flattening and bending machine. 3,628,369, Cl. 72-385.

Williamson, John Duff: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph,3,628,999.

Willig, Frank J. Method and apparatus for neutralizing electrostatically charged fluids. 3,629,656, Cl. 317-2.

Willoughby, Joseph A.; and Ruark, Brian R., to Texas Instruments, Incorporated. Method of making edgelay material. 3,628,235, Cl. 29-480.

Wills, James Milner, to General Electric Company. Free piston generator. 3,629,596, Cl. 290-1.

Wilson, Alexander J., to Girling Limited. Fluid pressure control valve. 3,628,554, Cl. 137-85.

Wilson, Eugene M.: *See—*
Liess, Richard K.; Ribbing, Donald E.; Stepe, Visvaldis A.; and Wilson, Eugene M.,3,628,612.

Wilson, James, to Bell Telephone Laboratories, Incorporated. Connector for flexible circuitry. 3,629,787, Cl. 339-17.

Wilson, William Albert John. Grinding machines. 3,628,290, Cl. 51-134.5

Windmoller & Holscher: *See—*
Schmedding, Herbert, 3,628,720.

Winkler, De Loss E., to Shell Oil Company. Chloroalkylated block copolymers. 3,629,371, Cl. 260-880.

Wirley, John F., to Xerox Corporation. Method of removing the residual toner particles from a photoconductive surface. 3,628,950, Cl. 96-1.4

Wisconsin Alumni Research Foundation: *See—*
Derse, Philip H., 3,629,469.
Richardson, Thomas; and Hustad, Gerald Orton, 3,629,162.

Wise, Lester V.; and Gripekoven, Henry A., to Federal Business Products, Inc. Retail price tag and protective envelope assembly. 3,628,266, Cl. 40-10.

Witheridge, Rodney Ernest: *See—*
Groszek, Aleksander Jerzy; Witheridge, Rodney Ernest; and Geach, Charles John,3,629,107.

Wittmann, Otto: *See—*
Sander, Bruno; Pommer, Ernst-Heinrich; Clad, Werner Helmut; and Wittmann, Otto,3,629,466.

Wohrer, Luis C.: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C.,3,628,995.

Wojahn, Charles P., 1/2 to Wojahn, Charles William. Temperature-sensing system for placement of fishing lures. 3,628,274, Cl. 43-43.12

Wojahn, Charles William: *See—*
Wojahn, Charles P., 3,628,274.

Wolf, Charles B.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A.,3,629,553.

Wolf, Irving W.; Lienhard, Heinz; and Levitsky, Moses I., deceased0 (by Levitsky, Rosanne A.; administratrix), to Ampex Corporation. Casting procedure for high quality epoxy layers. 3,629,388, Cl. 264-219.

Wolf, Richard B., to Bell Telephone Laboratories, Incorporated. PBX telephone system with main and satellite switch units. 3,629,511, Cl. 179-18.

Wolkar, Edwin L.: *See—*
Stephenson, Harry B.; Clapson, William J.; and Wolkar, Edwin L.,3,629,206.

Wollweber, Hartmund: *See—*
Horstmann, Harald; Wollweber, Hartmund; and Meng, Karl,3,629,442.

Woltermann, Jay R.: *See—*
Lecher, Hans Z.; Braus, Harry; and Woltermann, Jay R.,3,629,141.

Wolzak, Willem, to Stork Amsterdam N.V. Device for tilting advancing containers. 3,628,651, Cl. 198-33.

Wooden, John A., to Brookside Corporation. Light weight fan assembly. 3,628,888, Cl. 416-210.

Woodhead, Harry Stanley, to International Standard Electric Corporation. Electromagnetic switch construction. 3,629,749, Cl. 335-196.

Woodruff, Frank: *See—*
Ferguson, John H., Jr.; and Woodruff, Frank,3,628,894.

Woodward, Derrick R.; and Stucki, Daniel, to JWI Ltd. Suction box for a papermaking machine. 3,629,058, Cl. 162-363.

Wooffindin, Frank: *See—*
Wells, Graham Melbourne; and Wooffindin, Frank,3,628,553.

Woolf, Cyril: *See—*
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril,3,629,255.

Workman, David E.: *See—*
Wynne, Donald T.; Workman, David E.; and Kneier, Joseph W.,3,628,843.

Wormser, Hans H.: *See—*
Louis, Arnold S.; and Wormser, Hans H.,3,629,779.

Worrall, John L., to SCM Corporation. Solid state line keyer. 3,629,507, Cl. 178-79.

Wright, Ernest C., to Union Camp Corporation. Shipping and delivery shelved containers for food. 3,628,842, Cl. 312-259.

Wright, James R., to Atomic Energy of Canada Limited. Reactor tube end closure. 3,629,069, Cl. 176-87.

Wrigley, Wm., Jr., Company: *See—*
Litchfield, John H.; and Vely, Victor G., 3,629,395.

Wu, Tao-Yuan, to Ford Motor Company. Induction system for a V type internal combustion engine. 3,628,512, Cl. 123-52.

Wuerfel, Robert P. Gearings. 3,628,401, Cl. 74-865.

Wurl, Loel R. Dental clamp. 3,628,249, Cl. 32-63.

Wynne, Donald T.; Workman, David E.; and Kneier, Joseph W., to Pendleton Tool Industries, Inc. Container for fishing tackle or the like. 3,628,843, Cl. 312-294.

Wynne, James R.: *See—*
Gill, John D.; and Wynne, James R.,3,628,485.

Wysocki, Carl G.: *See—*
Dominik, Jurgen G.; Presson, Robert D.; and Wysocki, Carl G.,3,629,148.

Xerox Corporation: *See—*
Lavander, Edward J., 3,628,785.
Maloney, Thomas O.; and Pease, Donald L., 3,628,786.
Rod, Trygve R., 3,628,408.
Wirley, John F., 3,628,950.
Zucker, Edwin, 3,628,859.

Yabuuchi, Hiroshi: *See—*
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi,3,629,215.

Yackel, Edward C., to Eastman Kodak Company. Method of nucleating aluminum. 3,628,978, Cl. 117-34.

Yalof, Stanley A.; and Van Doren, Lawrence. Capacitance and dissipation factor measuring apparatus having coherent detectors. 3,629,700, Cl. 324-60.

Yamada, Kazuo: *See—*
Nakamura, Minoru; Minamibata, Megumi; Terao, Munetika; Kawabata, Sueo; Nishimura, Masateru; Kato, Toshio; and Yamada, Kazuo,3,628,219.

Yamada, Keisho; Nagai, Shigeki; Odan, Kyoji; and Hidaka, Mikio, to UBE Industries, Ltd. Process for manufacturing acrylonitrile from propylene. 3,629,317, Cl. 260-465.3

Yamaguchi, Hideo: *See—*
Otsuka, Masatomi; Komura, Seizo; and Yamaguchi, Hideo,3,629,249.

Yamaguchi, Kazuo: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Matsuura, Junichi; Hasuo, Masayoshi; and Kojima, Kazuhisa,3,629,216.

Yamaguchi, Kenichi: *See—*
Nagano, Yoshihiko; Yamaguchi, Kenichi; and Yamamoto, Tomohisa,3,628,555.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Tanaka, Kenzo; and Tomita, Fujihiko, 3,628,619.

Yamamoto, Akira: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; and Yamamoto, Akira,3,629,237.

Yamamoto, Hisao: *See—*
Arasaki, Seitetsu; Wakimura, Atsushi; Yamamoto, Hisao; and Inaba, Shigeho,3,629,238.

Yamamoto, Hisao; and Nakao, Masaru, to Sumitomo Chemical Company, Ltd. Process for the preparation of 3-indolyl aliphatic acid derivatives. 3,629,284, Cl. 260-326.13

Yamamoto, Tomohisa: *See—*
Nagano, Yoshihiko; Yamaguchi, Kenichi; and Yamamoto, Tomohisa,3,628,555.

Yamamoto, Yukio: *See—*
Hirama, Teruo; and Yamamoto, Yukio,3,629,818.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Kawamura, Shigeo; Hirano, Takayoshi; Takamura, Shuichi; and Okazaki, Masahiko, 3,629,306.

Yamanouchi, Saburo; Yasuno, Kiyoshi; and Kitamura, Shuji, to Sumitomo Chemical Company, Ltd. Thermoplastic resin composition and a method for the production thereof. 3,629,170, Cl. 260-23.

Yamashita, Kaichiro: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.

Yamazaki, Eiichi; Maruyama, Kooichi; and Ogura, Iwao, to Hitachi, Ltd. Correcting lens. 3,628,850, Cl. 350-175.

Yao, Shi-Kuang, to GAF Corporation. Trinuclear methine dyes for use in electro- photographic system. 3,628,951, Cl. 96-1.7

Yasuno, Kiyoshi: *See—*
Yamanouchi, Saburo; Yasuno, Kiyoshi; and Kitamura, Shuji,3,629,170.

Yates, Vance J.; and Mancini, Lawrence O., to University of Rhode Island. Avian encephalomyelitis vaccine. 3,629,396, Cl. 424-89.

Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo, to Toray Industries, Inc. Process for the production of a thermally stable polymer. 3,629,180, Cl. 260-30.6

Yokozawa, Masami; and Iwasa, Hitoo, to Matsushita Electronics Corporation. Semiconductor device and method of manufacturing same. 3,629,666, Cl. 317-234.

Yonezawa, Toshiya; and Sumitomo, Hirokazu, to Nippon Steel Corporation. Method for cooling thick steel plates. 3,629,015, Cl. 148-143.

Yoshida, Kenichi: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi,3,629,707.

Yoshida, Masatsugu: *See—*
Watanabe, Takeshi; Yoshida, Masatsugu; Akutagawa, Takaichi; and Noguchi, Shiro,3,629,387.

Yoshida, Tasuku: *See—*
Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro,3,629,856.

Yoshida, Yasuyuki: *See—*
Nishio, Yasuhiro; Ohmae, Takashi; Yoshida, Yasuyuki; and Oka, Tamotsu,3,628,924.

Yoshigai, Kiyokazu. Bicycle brake. 3,628,635, Cl. 188-26.

Yoshihara, Mitsuo; and Mizutani, Kazunori, to Nitto Electric Industrial Co., Ltd. Epoxy resin composition and its production. 3,629,204, Cl. 260-78.4

Yoshii, Toshiya: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.

Young, David W.: *See—*
Gower, Howard D.; Gower, Bob G.; and Young, David W.,3,629,112.

Young, Herman S. W.: *See—*
Keatinge, Gerald R.; and Young, Herman S. W.,3,628,394.

Young, Kenneth A.: *See—*
Kester, Jack R.; Multhaup, Ray D.; Roberts, William R.; Townsend, Raymond L.; and Young, Kenneth A.,3,629,547.

Yuan, William K. C. Path selection systems. 3,629,512, Cl. 179-18.

Yumoto, Hirosuke: *See—*
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo,3,629,180.

Zabel, Hans-J.: *See—*
Klein, Eberhard; and Zabel, Hans-J.,3,629,718.

Zangrando, Roy A., to United States of America, Army. Eccentric-ring combination lock. 3,628,355, Cl. 70-315.

Zavodsky, Ladislav: *See—*
Somora, Zdeno; Zavodsky, Ladislav; and Kalisky, Benedikt,3,628,667.

Zeblisky, Rudolph J.: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph,3,628,999.

Zegers, Leo Eduard; Snijders, Wilfred Andre Maria; and Kuilman, Han, to U.S. Philips Corporation. Transmission system for the transmission of information in a prescribed frequency band. 3,629,505, Cl. 178-69.5

Zenith Radio Corporation: *See*—
Kramer, Walter E., 3,628,933.
Zenuch, George: *See*—
Andreaggi, Joseph R.; and Zenuch, George,3,629,808.
Ziegler, Kurt F., to Outboard Marine Corporation. Method of constructing an engine with a prefabricated cylinder line. 3,628,237, Cl. 29-527.6
Zimmerman, Charles R.: *See*—
Frederick, Phyllis; and Zimmerman, Charles R.,3,628,792.
Zirkle, Charles L.: *See*—
Kaiser, Carl; and Zirkle, Charles L.,3,629,267.
Zitron, Benjamin C.: *See*—
Dancis, Douglas E.; Dorfuss, Gerald E.; and Zitron, Benjamin C.,3,629,844.
Zivi, Samuel M., to TRW Inc. Safety apparatus for nuclear reactors. 3,629,064, Cl. 176-38.
Zollman, Peter M., to Badalex Limited. Manufacture of electric switches. 3,628,242, Cl. 29-622.
Zucker, Edwin, to Xerox Corporation. Imaging machine improvement. 3,628,859, Cl. 355-8.
Zuckerman, Harold J., to Zyrotron Industries, Inc. Control apparatus. 3,629,599, Cl. 307-38.
Zuse KG: *See*—
Muller, Jurgen; and Lotz, Winfried, 3,628,252.
Zyrotron Industries, Inc.: *See*—
Zuckerman, Harold J., 3,629,599.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amdahl, Gene M., E. D. Councill, R. J. Flaherty, and J. P. Zagursky, to International Business Machines Corp. Memory protection system. Re. 27,251, 12–21–71, Cl. 340—172.5.

Aziende Chemiche Riunite Agelini : *See*—
Palazzo, Guiseppe. Re. 27,253.

Bell Telephone Laboratories, Inc. : *See*—
Lucky, Robert W. Re. 27,250.

Cliftronics, Inc. : *See*—
Ganowsky, Raymond J. Re. 27,247.

Councill, Edwin D. : *See*—
Amdahl, Gene M., Councill, Flaherty, and Zagursky. Re. 27,251.

Flaherty, Robert J. : *See*—
Amdahl, Gene M., Councill, Flaherty, and Zagursky. Re. 27,251.

Ganowsky, Raymond J., to Cliftronics, Inc. Rotary solenoid. Re. 27,247, 12–21–71, Cl. 335—228.

Harper-Wyman Co. : *See*—
Lamar, Charles C. Re. 27,254.

Hedstrom Union Co. : *See*—
Pierson, Raymond G., Jr. Re. 27,255.

International Business Machines Corp. : *See*—
Amdahl, Gene M., Councill, Flaherty, and Zagursky. Re. 27,251.

Lamar, Charles C., to Harper-Wyman Co. Gas oven ignition. Re. 27,254, 12–21–71, Cl. 126—39.

Lucky, Robert W., to Bell Telephone Laboratories, Inc. Adaptive equalizer for digital transmission systems having means to correlate present error component with past, present and future received data bits. Re. 27,250, 12–21–71, Cl. 333—18.

McJunkin, William D., and J. A. Webb, Sr. ; said Webb assignor to said McJunkin. Automatic bowling score computer. Re. 27,249, 12–21–71, Cl. 273—54.

Mercier, Christian, to Mercier Freres. Tanning and tawing machine for the slitting of hides and skins. Re. 27,248, 12–21–71, Cl. 69—10.

Mercier Freres : *See*—
Mercier, Christian. Re. 27,248.

Mobil Oil Corp. : *See*—
Sklar, Isadore, and Walker. Re. 27,252.

Palazzo, Guiseppe, to Aziende Chimiche Riunite Agelini. Topical anti-inflammatory composition containing (indazole-3-YL)-oxyalkanoic acids. Re. 27,253, 12–21–71, Cl. 424—273.

Pierson, Raymond G., Jr., to Hedstrom Union Co. Children's play seat. Re. 27,255, 12–21–71, Cl. 297—258.

Sklar, Isadore, and G. W. Walker, to Mobil Oil Corporation. Thermal method for producing heavy oil. Re. 27,252, 12–21–71, Cl. 166—251.

Walker, G. W. : *See*—
Sklar, Isadore, and Walker. Re. 27,252.

Webb, Joseph A., Sr. : *See*—
McJunkin, William D., and Webb. Re. 27,249.

Zagursky, Joseph J. : *See*—
Amdahl, Gene M., Councill, Flaherty, and Zagursky. Re. 27,251.

LIST OF DESIGN PATENTEES

Abbot Laboratories : *See*—
Giles, Robert L. 222,761.

Ackerman Engravers, Inc. : *See*—
Strianese, Bernard V. 222,748.

Airborne, S.A. : *See*—
Bernard, Charles. 222,745.

Albrecht, Leonard N., to Albert J. Day. Credit card data terminal. 222,747, 12–21–71, Cl. D26—5.

Allen, Louis E. Vanity compact. 222,762, 12–21–71, Cl. D86—10.

Americana Craftsmen, Inc. : *See*—
Freeman, Max. 222,759.

Autogear of California : *See*—
Reilly, Robert G. T. 222,744.

Bernard, Charles, to Airborne, S.A. Chair. 222,745, 12–21–71, Cl. D15—11.

Broadhead, Reginal M., to Crown Distillers Ltd. Bottle. 222,741, 12–21–71, Cl. D9—63.

Broadhead, Reginald M., to Crown Distillers Ltd. Bottle 222,742, 12–21–71, Cl. D9—67.

Carolina Enterprises, Inc. : *See*—
Michael, John M. 222,755.

Cook, Raymon W. Golf putter head. 222,752, 12–21–71, Cl. D34—5.

Cook, Raymon W. Golf putter head. 222,753, 12–21–71, Cl. D34—5.

Crown Distillers Ltd. : *See*—
Broadhead, Reginald M. 222,741.
Broadhead, Reginald M. 222,742.

Datel Corp. : *See*—
Rudin, Melvin. 222,751.

Day, Albert J. : *See*—
Albrecht, Leonard N. 222,747.

Dykes, Downer P., to Rival Mfg. Co. Housing for a portable food mixer. 222,756, 12–21–71, Cl. D44—1.

Freeman, Max., to Americana Craftsmen, Inc. Machine for cutting and sealing plastic sheeting. 222,759, 12–21–71, Cl. D55—1.

Friedman, Edward I. Wall mounted fld. 222,739, 12–12–71, Cl. D8—14.

Friedman, Edward I. Fld. 222,740, 12–21–71, Cl. D8—14.

Gilbertson, John E. Combined air purifier and deodorizer for automobiles. 222,746, 12–21–71, Cl. D23—149.

Giles, Robert L., to Abbot Laboratories. Measuring container for pediatric solution administration. 222,761, 12–21–71, Cl. D83—8.

Goldpaint, Leon. Advertising sign or similar article. 222,764. 12–21–71, Cl. D96—12.

Hicks, Harris V. Vehicle lamp unit. 222,758, 12–21–71, Cl. D48—32.

Jonassen, Severin L., and H. Landell, to Leeds & Northrup Co. Chart recorder. 222,750, 12–21–71, Cl. D26—14.

Jones, James A. Game board. 222,754, 12–21–71, Cl. D34—5.

Landell, Harper : *See*—
Jonassen, Severin L., and Landell. 222,750.

Leeds & Northrup Co. : *See*—
Jonassen, Severin L., and Landell. 222,750.

Lehmann, Herbert G. Lamp cord switch. 222,749, 12–21–71, Cl. D26—13.

Meyer, Stanley F. Cardiac resuscitator. 222,760, 12–21–71, Cl. D83—1.

Michael, John M., to Carolina Enterprises, Inc. Riding toy. 222,755, 12–21–71, Cl. D34—15.

Padmore, Robert A., to The Scranton Corp. Lace table cloth. 222,763, 12–21–71, Cl. D92—26.

Reilly, Robert G. T., to Autogear of California. Decorative sill and rail combination for automobile windows. 222,744, 12–21–71, Cl. D14—6.

Rival Mfg. Co. : *See*—
Dykes, Downer P. 222,756.

Rudin, Melvin, to Datel Corp. Coupler. 222,751, 12–21–71, Cl. D26—14.

Scranton Corp., The : *See*—
Padmore, Robert A. 222,763.

Selden, Robert W., to Weyerhaeuser Co. Light standard or similar article. 222,757, 12–21–71, Cl. D48—31.

Shaw, John B. Building. 222,743, 12–21–71, Cl. D13—1.

Strianese, Bernard V., Ackerman Engravers, Inc. Combined miniature lamp and holder therefor. 222,748, 12–21–71, Cl. D26—8.

Weyerhaeuser Co. : *See*—
Selden, Robert W. 222,757.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 21, 1971

NOTE.—First number, class; second number, subclass; third number, patent number

2— 2.1	3,628,189	
3	3,628,190	
	3,628,191	
130	3,628,192	
3— 1	3,628,193	
4— 10	3,628,194	
26	3,628,195	
113	3,628,197	
115	3,628,196	
172.21:	3,628,198	
5— 63	3,628,199	
64	3,628,200	
241	3,628,201	
7— 14.1	3,628,202	
8— 54	3,628,905	
111	3,628,906	
120	3,628,907	
127.51:	3,628,910	
.6	3,628,908	
	3,628,909	
142	3,628,911	
9— 1	3,628,203	
	3,628,204	
8	3,628,205	
11	3,628,206	
12— 1	3,628,207	
20	3,628,208	
14— 71	3,628,209	
15— 3	3,628,210	
21	3,628,212	
42	3,628,211	
352	3,628,213	
16— 35	3,628,214	
150	3,628,215	
163	3,628,216	
190	3,628,217	
17— 1	3,628,218	
19—231	3,628,219	
21— 2.5	3,628,912	
23— 87	3,628,913	
143	3,628,914	
230	3,628,915	
231	3,628,916	
273	3,628,917	
284	3,628,918	
301	3,628,919	
315	3,628,920	
24— 56	3,628,220	
126	3,628,221	
201	3,628,222	
28— 1.6	3,628,224	
29— 1.3	3,628,225	
156.4	3,628,922	
.8	3,628,226	
157.4	3,628,227	
	3,628,923	
182.7	3,628,921	
196	3,628,924	
203	3,628,228	
205	3,628,229	
212	3,628,230	
243	3,628,231	
407	3,628,232	
473.1	3,628,233	
	3,628,234	
480	3,628,235	
482	3,628,236	
527.6	3,628,237	
596	3,628,238	
	3,628,239	
	3,628,240	
605	3,628,241	
622	3,628,242	
625	3,628,243	
626	3,628,244	
628	3,628,245	
30— 92.5	3,628,246	
233	3,628,247	
32— 10	3,628,248	
63	3,628,249	
33— 15	3,628,250	
27	3,628,251	
32	3,628,252	
143	3,629,639	
189	3,628,253	
225	3,628,254	
34— 56	3,628,258	
35— 9	3,628,255	
	3,628,259	
10.2	3,628,256	
35— 28.5	3,628,260	
35	3,628,257	
70	3,628,261	
36— 7.5	3,628,262	
37— 58	3,628,263	
108	3,628,264	
126	3,628,265	
40— 10	3,628,266	
20	3,628,267	
28	3,628,268	
68.6	3,628,269	
113	3,628,270	
311	3,628,271	
42— 25	3,628,277	
39.5	3,628,272	
62	3,628,278	
87	3,628,273	
43— 17	3,628,275	
.2	3,628,279	
42.09:	3,628,276	
43.12:	3,628,274	
44— 4	3,628,925	
7	3,628,927	
63	3,628,926	
66	3,628,928	
46— 44	3,628,280	
94	3,628,281	
161	3,628,282	
233	3,628,283	
243	3,628,284	
	3,628,285	
247	3,628,286	
47— 58	3,628,287	
48—210	3,628,929	
49—109	3,628,288	
409	3,628,289	
51—134.5	3,628,290	
148	3,628,291	
206	3,628,292	
267	3,628,293	
283	3,628,294	
319	3,628,295	
52— 98	3,628,296	
267	3,628,297	
473	3,628,298	
488	3,628,299	
721	3,628,300	
53— 14	3,628,301	
30	3,628,303	
31	3,628,304	
35	3,628,305	
59	3,628,302	
182	3,628,306	
230	3,628,309	
299	3,628,307	
54— 8	3,628,308	
55— 67	3,628,310	
223	3,628,311	
232	3,628,312	
283	3,628,313	
387	3,628,314	
56— 10.5	3,628,315	
13.3	3,628,316	
27.5	3,628,319	
219	3,628,317	
249	3,628,318	
57— 34	3,628,320	
35	3,628,321	
58— 4	3,628,322	
23	3,628,323	
	3,628,324	
82	3,628,325	
	3,628,326	
116	3,628,327	
60— 39.29:	3,628,329	
53	3,628,330	
54.6	3,628,331	
105	3,628,332	
272	3,628,328	
61— 1	3,628,333	
5	3,628,334	
45	3,628,335	
46.5	3,628,336	
53.68:	3,628,337	
67	3,628,338	
62— 5	3,628,339	
18	3,628,340	
23	3,628,342	
58	3,628,341	
	3,628,343	
62— 58	3,628,344	
123	3,628,345	
126	3,628,346	
208	3,628,347	
241	3,628,348	
243	3,628,349	
290	3,628,590	
429	3,628,350	
63— 15.5	3,628,351	
64— 15	3,628,352	
27	3,628,353	
65— 2	3,628,930	
11	3,628,931	
18	3,628,932	
30	3,628,933	
	3,628,934	
40	3,628,935	
90	3,628,936	
141	3,628,937	
207	3,628,938	
276	3,628,939	
66— 86	3,628,354	
69— 10	RE.27,248	
70—315	3,628,355	
449	3,628,356	
71— 35	3,628,940	
67	3,628,941	
92	3,628,942	
93	3,628,943	
98	3,628,944	
100	3,628,945	
103	3,628,946	
72— 6	3,628,357	
8	3,628,358	
76	3,628,359	
169	3,628,360	
181	3,628,361	
227	3,628,364	
237	3,628,365	
242	3,628,362	
245	3,628,363	
249	3,628,366	
324	3,628,367	
361	3,629,368	
385	3,628,369	
467	3,628,370	
468	3,628,449	
73— 1	3,628,371	
37	3,628,372	
64.3	3,628,373	
67.8	3,628,374	
71.5	3,628,375	
89	3,628,376	
91	3,628,377	
93	3,628,378	
94	3,628,379	
147	3,628,380	
398	3,628,381	
422	3,628,382	
514	3,628,384	
516	3,628,383	
74— 5.6	3,628,385	
89	3,628,387	
.15:	3,628,386	
199	3,628,388	
230.17:	3,628,389	
	3,628,390	
.24:	3,628,391	
245	3,628,392	
470	3,628,393	
471	3,628,394	
473	3,628,395	
493	3,628,396	
625	3,628,397	
688	3,628,398	
711	3,628,399	
826	3,628,400	
865	3,628,401	
75— 3	3,628,947	
10	3,628,948	
159	3,628,949	
81— 3.42:	3,628,405	
9.5	3,628,402	
82— 24	3,628,403	
	3,628,404	
89	3,628,406	
83— 38	3,628,450	
140	3,628,407	
175	3,628,408	
	3,628,409	
83—287	3,628,410	
414	3,628,411	
455	3,628,412	
513	3,628,413	
84— 1.03:	3,629,480	
	3,629,481	
	3,629,482	
.16:	3,629,483	
.25:	3,629,484	
257	3,628,414	
89— 1	3,628,415	
.5	3,628,416	
90— 13	3,628,417	
91— 47	3,628,418	
224	3,628,419	
358	3,628,421	
367	3,628,420	
369	3,628,422	
376	3,628,423	
446	3,628,424	
491	3,628,425	
92—138	3,628,426	
144	3,628,427	
93— 39.2	3,628,428	
95— 1	3,628,429	
.1	3,628,430	
11.5	3,628,431	
31	3,628,432	
	3,628,435	
42	3,628,436	
53	3,628,433	
	3,628,437	
55	3,628,434	
	3,628,438	
64	3,628,439	
89	3,628,440	
96— 1.4	3,628,950	
.7	3,628,951	
3	3,628,952	
36.3	3,628,953	
49	3,628,954	
61	3,628,955	
64	3,628,956	
87	3,628,957	
94	3,628,959	
101	3,628,958	
111	3,628,961	
115	3,628,962	
	3,628,963	
124	3,628,960	
	3,628,964	
98— 40	3,628,441	
121	3,628,442	
	3,628,443	
99— 23	3,628,965	
80	3,628,966	
103	3,628,967	
139	3,628,968	
	3,628,969	
140	3,628,970	
163	3,628,971	
212	3,628,972	
275	3,628,444	
277.1	3,628,445	
305	3,628,446	
341	3,628,447	
362	3,628,448	
101— 4	3,628,451	
90	3,628,452	
111	3,628,453	
147	3,628,454	
102— 28	3,628,455	
38	3,628,456	
49.3	3,628,457	
70.2	3,628,458	
81.2	3,628,459	
104— 8	3,628,460	
17	3,628,461	
105	3,628,462	
152	3,628,463	
105—199	3,628,464	
201	3,628,465	
366	3,628,466	
369	3,628,467	
106— 89	3,628,973	
125	3,628,974	
279	3,628,975	
288	3,628,976	
108— 51	3,628,468	
56	3,628,469	
108— 64	3,628,470	
132	3,628,471	
110— 1	3,628,474	
7	3,628,472	
	3,628,473	
112—147	3,628,476	
149	3,628,475	
151	3,628,477	
158	3,628,478	
167	3,628,479	
181	3,628,480	
199	3,628,481	
217.4	3,628,482	
113—119	3,628,483	
114— 6.5	3,628,486	
66.5	3,628,484	
	3,628,485	
	3,628,487	
67	3,628,488	
222	3,628,489	
115— 1	3,628,490	
2	3,628,491	
17	3,628,492	
19	3,628,493	
116—102	3,628,494	
115	3,628,498	
.5	3,628,495	
124	3,628,496	
	3,628,497	
137	3,628,499	
117— 11	3,628,977	
34	3,628,978	
36.4	3,628,979	
.8	3,628,980	
37	3,628,981	
38	3,628,982	
40	3,628,983	
46	3,628,984	
	3,628,985	
47	3,628,987	
49	3,628,986	
63	3,628,988	
70	3,628,989	
71	3,628,990	
72	3,628,991	
76	3,628,992	
100	3,628,993	
107.1	3,628,994	
121	3,628,997	
138.8	3,628,995	
	3,628,996	
201	3,628,998	
212	3,628,999	
218	3,629,000	
118— 3	3,628,500	
261	3,628,502	
410	3,628,503	
630	3,628,501	
637	3,628,504	
119— 15	3,628,608	
61	3,628,505	
71	3,628,506	
122— 6.5	3,628,509	
7	3,628,508	
32	3,628,507	
123— 32	3,628,510	
41.35:	3,628,511	
52	3,628,512	
90.34:	3,628,513	
.48:	3,628,514	
119	3,628,515	
136	3,628,516	
	3,628,517	
190	3,628,518	
124— 24	3,628,519	
30	3,628,520	
126— 39	RE.27,254	
85	3,628,521	
127— 5	3,629,001	
	3,629,002	
30	3,629,003	
128— 2	3,628,522	
	3,628,523	
	3,628,524	
	3,628,525	
.05:	3,628,526	
.06:	3,628,527	
57	3,628,528	
66	3,628,529	
130	3,628,530	
128—142.5	3,628,531	
145.8	3,628,532	
263	3,628,533	
285	3,628,534	
303	3,628,535	
327	3,628,536	
402	3,628,537	
422	3,628,558	
427	3,628,539	
131— 10.5	3,628,540	
140	3,628,541	
176	3,628,542	
207	3,628,543	
132— 7	3,628,544	
11	3,628,545	
53	3,628,546	
148	3,628,547	
134— 31	3,629,004	
171	3,629,005	
135— 44	3,628,548	
136— 27	3,629,006	
	3,629,007	
86	3,629,008	
	3,629,009	
176	3,629,010	
137— 13	3,628,549	
38	3,628,550	
81.5	3,628,551	
	3,628,552	
	3,628,553	
85	3,628,554	
88	3,628,555	
106	3,628,556	
116.3	3,628,557	
118	3,628,558	
202	3,628,559	
312	3,628,560	
331	3,628,561	
459	3,628,562	
460	3,628,563	
516.29:	3,628,564	
525.3	3,628,565	
594	3,628,566	
596.13:	3,628,567	
610	3,628,568	
625.23:	3,628,570	
.3	3,628,569	
627.5	3,628,571	
138— 30	3,628,573	
161	3,628,572	
140— 72	3,628,574	
92.1	3,628,575	
141— 65	3,628,576	
333	3,628,577	
143— 6	3,628,578	
144—134	3,628,579	
146— 12	3,628,580	
153	3,628,581	
279	3,628,582	
148— 1.5	3,629,011	
6.14:	3,629,012	
.15:	3,629,013	
31.5	3,629,014	
143	3,629,015	
175	3,629,016	
179	3,629,017	
187	3,629,018	
149— 19	3,629,019	
	3,629,020	
50	3,629,021	
150— 33	3,628,583	
151— 38	3,628,584	
152—347	3,628,585	
356	3,628,586	
361	3,628,587	
156— 17	3,629,022	
	3,629,023	
56	3,629,024	
69	3,629,025	
161	3,629,026	
167	3,629,027	
175	3,629,028	
189	3,629,029	
	3,629,030	
190	3,629,031	
196	3,629,032	
204	3,629,033	
219	3,629,034	
	3,629,035	
241	3,629,036	

156–244 : 3,629,037
245 : 3,629,038
269 : 3,629,039
275 : 3,629,040
289 : 3,629,041
303.1 : 3,629,042
358 : 3,629,043
160– 40 : 3,628,588
161– 5 : 3,629,044
3,629,045
43 : 3,629,046
57 : 3,629,047
3,629,048
60 : 3,629,049
64 : 3,629,050
162 : 3,629,051
170 : 3,629,052
173 : 3,629,053
182 : 3,629,054
162–159 : 3,629,055
305 : 3,629,056
312 : 3,629,057
336 : 3,628,589
363 : 3,629,058
164– 63 : 3,628,591
183 : 3,628,592
208 : 3,628,593
270 : 3,628,594
274 : 3,628,595
283 : 3,628,596
344 : 3,628,597
350 : 3,628,598
165– 22 : 3,628,599
3,628,600
47 : 3,628,601
61 : 3,628,602
151 : 3,628,603
166– .5 : 3,628,604
226 : 3,628,605
241 : 3,628,606
251 : Re.27,252
305 : 3,628,607
171– 14 : 3,628,609
172– 9 : 3,628,610
39 : 3,628,611
311 : 3,628,613
805 : 3,628,612
173– 29 : 3,628,614
174– 7 : 3,629,485
16 : 3,629,486
22 : 3,629,487
73 : 3,629,488
107 : 3,629,489
175– 65 : 3,628,615
375 : 3,628,616
176– 20 : 3,629,060
22 : 3,629,059
31 : 3,629,062
37 : 3,629,063
38 : 3,629,064
54.000 3,629,065
76 : 3,629,066
78 : 3,629,061
3,629,067
86 : 3,629,068
87 : 3,629,069
3,629,070
177–116 : 3,628,617
178– 5.2 : 3,629,490
.4 : 3,629,491
3,629,492
6 : 3,629,493
.6 : 3,629,494
3,629,495
7.1 : 3,629,496
.2 : 3,629,498
3,629,499
.3 : 3,629,497
3,629,500
3,629,501
25 : 3,629,502
3,629,504
69.5 : 3,629,503
3,629,505
3,629,506
79 : 3,629,507
179– 5 : 3,629,508
15 : 3,629,509
3,629,510
18 : 3,629,511
3,629,512
3,629,513
99 : 3,629,514
100.2 : 3,629,515
3,629,516
3,629,517
3,629,518
3,629,519
3,629,520
107 : 3,629,521
156 : 3,629,522
175.31: 3,629,523
180– 1 : 3,628,620
7 : 3,628,618
9.64: 3,628,619
65 : 3,628,621

180– 69 : 3,628,622
79.2 : 3,628,623
98 : 3,628,624
115 : 3,628,625
181– 33 : 3,628,626
36 : 3,628,627
182–222 : 3,628,628
184– 6.17: 3,628,629
50 : 3,628,630
55 : 3,628,631
186– 1 : 3,628,632
188– 1 : 3,628,633
3,628,634
26 : 3,628,635
73.3 : 3,628,639
.4 : 3,628,636
300 : 3,628,637
312 : 3,628,638
190–412 : 3,628,640
192– .073 3,628,642
58 : 3,628,641
194– 10 : 3,628,643
195– 1.8 : 3,629,071
28 : 3,629,072
62 : 3,629,073
103.5 : 3,629,074
197– 12 : 3,628,644
90 : 3,628,645
198– 22 : 3,628,646
30 : 3,628,647
3,628,648
32 : 3,628,649
33 : 3,628,650
3,628,651
34 : 3,628,652
81 : 3,628,653
179 : 3,628,654
200– 6 : 3,629,524
11 : 3,629,525
16 : 3,629,526
19 : 3,629,527
38 : 3,629,528
42 : 3,629,529
44 : 3,629,530
48 : 3,629,531
81.9 : 3,629,532
144 : 3,629,533
157 : 3,629,534
168 : 3,629,535
3,629,536
202–248 : 3,629,094
203– 1 : 3,629,075
9 : 3,629,076
204– 28 : 3,629,077
35 : 3,629,078
67 : 3,629,079
72 : 3,629,080
157.1 : 3,629,081
159.14: 3,629,082
163 : 3,629,085
165 : 3,629,083
168 : 3,629,084
181 : 3,629,086
3,629,087
192 : 3,629,088
195 : 3,629,089
3,629,090
197 : 3,629,091
3,629,092
224 : 3,629,093
298 : 3,629,095
206– 8 : 3,628,655
46 : 3,628,656
208– 89 : 3,629,096
159 : 3,629,097
209–111.7 : 3,628,657
125 : 3,628,658
126 : 3,628,659
210– 31 : 3,629,098
104 : 3,628,660
3,629,099
130 : 3,628,661
136 : 3,628,662
141 : 3,628,663
169 : 3,628,664
242 : 3,628,665
370 : 3,628,666
446 : 3,628,668
510 : 3,628,669
519 : 3,628,667
528 : 3,628,670
211– 73 : 3,628,671
153 : 3,628,672
214– 1 : 3,628,673
3,628,674
3 : 3,628,675
35 : 3,628,676
450 : 3,628,677
730 : 3,628,678
215– 9 : 3,628,679
3,628,680
48 : 3,628,681
219– 10.55: 3,629,537
3,629,538
60 : 3,629,539
69 : 3,629,540

219– 78 : 3,629,541
79 : 3,629,542
85 : 3,629,543
93 : 3,629,544
121 : 3,629,545
3,629,546
130 : 3,629,547
131 : 3,629,548
216 : 3,629,549
285 : 3,629,550
300 : 3,629,551
302 : 3,629,552
383 : 3,629,553
522 : 3,629,554
525 : 3,629,555
220– 6 : 3,628,683
20.5 : 3,628,682
21 : 3,628,684
29 : 3,628,685
42 : 3,628,686
44 : 3,628,687
47 : 3,628,688
53 : 3,628,689
85 : 3,628,690
221– 45 : 3,628,691
70 : 3,628,692
223 : 3,628,693
265 : 3,628,694
222– 89 : 3,628,695
99 : 3,628,696
111 : 3,628,697
168 : 3,628,698
182 : 3,628,699
207 : 3,628,700
400.7 : 3,628,701
402.13: 3,628,702
454 : 3,628,703
513 : 3,628,704
527 : 3,628,705
567 : 3,628,706
3,628,707
224– 45 : 3,628,708
3,628,709
225– 96.5 : 3,628,710
226– 49 : 3,628,711
104 : 3,628,712
157 : 3,628,713
227– 7 : 3,628,714
136 : 3,628,715
228– 1 : 3,628,716
6 : 3,628,717
229– 15 : 3,628,718
52 : 3,628,719
55 : 3,628,720
87 : 3,628,721
234– 78 : 3,628,722
115 : 3,628,723
235– 22 : 3,628,724
61.11: 3,629,556
92 : 3,629,559
95 : 3,629,557
99 : 3,628,725
151.1 : 3,629,558
.11: 3,629,560
.12: 3,629,561
.21: 3,629,562
154 : 3,629,563
159 : 3,629,564
174 : 3,629,565
183 : 3,629,566
194 : 3,629,567
239–101 : 3,628,726
124 : 3,628,727
159 : 3,628,728
177 : 3,628,729
189 : 3,628,730
3,628,731
310 : 3,628,732
337 : 3,628,733
403 : 3,628,734
425.5 : 3,628,735
426 : 3,628,737
533 : 3,628,736
240– 2.1 : 3,629,568
7.1 : 3,629,569
3,629,570
153 : 3,629,571
241– 16 : 3,628,738
17 : 3,628,739
152 : 3,628,740
242– 18 : 3,628,741
55 : 3,628,742
.21: 3,628,744
.3 : 3,628,743
56.9 : 3,628,745
74 : 3,628,746
118.32: 3,628,747
186 : 3,628,749
3,628,750
187 : 3,628,751
192 : 3,628,748
3,628,752
197 : 3,628,753
198 : 3,628,754
244– 17.21: 3,628,755
42 : 3,628,756

244–110 : 3,628,757
135 : 3,628,758
246–169 : 3,629,572
248– 42 : 3,628,759
59 : 3,628,760
184 : 3,628,761
235 : 3,628,762
400 : 3,628,763
249– 9 : 3,628,764
19 : 3,628,765
129 : 3,628,766
250– 41.9 : 3,629,573
3,629,574
49.5 : 3,629,575
3,629,576
3,629,577
3,629,578
3,629,579
50 : 3,629,581
51.5 : 3,629,580
71.5 : 3,629,582
83 : 3,629,583
3,629,585
.3 : 3,629,584
3,629,586
3,629,587
84.5 : 3,629,588
205 : 3,629,589
208 : 3,629,590
213 : 3,629,591
216 : 3,629,592
219 : 3,629,593
221 : 3,629,594
223 : 3,629,595
251–139 : 3,628,767
148 : 3,628,768
149.9 : 3,628,769
331 : 3,628,770
252– 8.5 : 3,629,101
3,629,102
.55: 3,629,104
3,629,105
12 : 3,629,103
3,629,107
25 : 3,629,106
28 : 3,629,108
33 : 3,629,109
34.7 : 3,629,112
49.7 : 3,629,113
.8 : 3,629,114
.9 : 3,629,115
62 : 3,629,116
.1 : 3,629,117
.54: 3,629,118
.59: 3,629,157
63.2 : 3,629,110
75 : 3,629,111
77 : 3,629,119
78 : 3,629,120
89 : 3,629,121
3,629,122
3,629,123
99 : 3,629,124
135 : 3,629,125
171 : 3,629,128
188.3 : 3,629,129
300 : 3,629,100
3,629,130
301.1 : 3,629,132
3,629,133
3,629,134
3,629,135
3,629,138
.4 : 3,629,131
3,629,136
3,629,137
309 : 3,629,139
316 : 3,629,140
400 : 3,629,141
408 : 3,629,142
411 : 3,629,143
412 : 3,629,144
414 : 3,629,159
432 : 3,629,145
435 : 3,629,146
437 : 3,629,147
3,629,148
439 : 3,629,149
442 : 3,629,150
443 : 3,629,151
455 : 3,629,152
463 : 3,629,153
500 : 3,629,158
511 : 3,629,154
512 : 3,629,155
518 : 3,629,156
526 : 3,629,126
557 : 3,629,127
254–122 : 3,628,771
134 : 3,628,772
260– 2 : 3,629,160
.1 : 3,629,161
.5 : 3,629,162
3,629,163
3,629,164
3,629,165

260– 17.3 : 3,629,166
18 : 3,629,167
3,629,168
22 : 3,629,169
23 : 3,629,170
3,629,189
.7 : 3,629,171
3,629,172
3,629,173
29.1 : 3,629,174
.4 : 3,629,176
3,629,177
.6 : 3,629,175
3,629,179
30.6 : 3,629,180
31.8 : 3,629,181
33.4 : 3,629,182
37 : 3,629,183
3,629,297
38 : 3,629,184
40 : 3,629,185
41 : 3,629,186
3,629,187
45.75: 3,629,188
.8 : 3,629,190
3,629,191
3,629,192
.85: 3,629,193
3,629,194
46 : 3,629,195
.5 : 3,629,196
47 : 3,629,197
3,629,198
53 : 3,629,199
75 : 3,629,200
3,629,201
3,629,202
78 : 3,629,203
.4 : 3,629,204
.5 : 3,629,205
3,629,357
79 : 3,629,206
.3 : 3,629,207
3,629,479
.5 : 3,629,208
3,629,210
80.73: 3,629,209
.78: 3,629,211
3,629,212
82.1 : 3,629,213
85.5 : 3,629,214
3,629,215
88.2 : 3,629,216
.7 : 3,629,217
91.1 : 3,629,219
92.1 : 3,629,218
.8 : 3,629,220
93.1 : 3,629,221
.7 : 3,629,222
94.2 : 3,629,223
.9 : 3,629,224
137 : 3,629,225
174 : 3,629,227
185 : 3,629,228
209 : 3,629,229
3,629,230
210 : 3,629,231
3,629,232
3,629,233
.5 : 3,629,234
211.5 : 3,629,235
3,629,236
226 : 3,629,237
234 : 3,629,238
239 : 3,629,239
.5 : 3,629,240
.55: 3,629,242
3,629,243
3,629,244
3,629,245
.9 : 3,629,241
240 : 3,629,246
3,629,247
241 : 3,629,249
242 : 3,629,248
243 : 3,629,250
247.1 : 3,629,251
3,629,252
.2 : 3,629,253
248 : 3,629,254
3,629,255
249.8 : 3,629,256
3,629,257
3,629,258
3,629,259
250 : 3,629,260
251 : 3,629,261
3,629,262
257 : 3,629,263
270 : 3,629,264
287 : 3,629,265
288 : 3,629,266
293.69: 3,629,268
.81: 3,629,269
294 : 3,629,267

260–294.8 : 3,629,270
3,629,281
295.5 : 3,629,271
296 : 3,629,272
3,629,273
304 : 3,629,274
306.8 : 3,629,275
307 : 3,629,276
308 : 3,629,277
309.6 : 3,629,278
3,629,279
.7 : 3,629,280
310 : 3,629,282
325 : 3,629,286
326.13: 3,629,284
.3 : 3,629,283
332.3 : 3,629,285
340.9 : 3,629,287
345.1 : 3,629,288
.2 : 3,629,289
3,629,290
346.3 : 3,629,291
347.8 : 3,629,292
3,629,293
348 : 3,629,295
.5 : 3,629,294
349 : 3,629,296
397.1 : 3,629,298
3,629,299
.2 : 3,629,300
.3 : 3,629,301
.4 : 3,629,302
3,629,303
3,629,305
.5 : 3,629,304
404.5 : 3,629,306
425 : 3,629,307
448.2 : 3,629,308
3,629,309
.8 : 3,629,310
455 : 3,629,311
3,629,312
3,629,313
463 : 3,629,314
464 : 3,629,315
465.2 : 3,629,316
.3 : 3,629,317
.5 : 3,629,318
468 : 3,629,319
470 : 3,629,320
475 : 3,629,321
476 : 3,629,322
484 : 3,629,323
485 : 3,629,324
496 : 3,629,325
502.4 : 3,629,326
512 : 3,629,327
525 : 3,629,328
534 : 3,629,329
553 : 3,629,330
555 : 3,629,331
556 : 3,629,332
563 : 3,629,333
565 : 3,629,334
566 : 3,629,335
590 : 3,629,336
613 : 3,629,337
615 : 3,629,338
621 : 3,629,339
623 : 3,629,340
635 : 3,629,341
3,629,343
644 : 3,629,342
645 : 3,629,344
3,629,345
652 : 3,629,346
666 : 3,629,347
3,629,348
3,629,349
672 : 3,629,350
3,629,351
674 : 3,629,352
677 : 3,629,478
679 : 3,629,353
683.15: 3,629,355
.3 : 3,629,354
.53: 3,629,356
825 : 3,629,358
3,629,359
829 : 3,629,360
830 : 3,629,361
835 : 3,629,226
3,629,362
8 7 : 3,629,363
838 : 3,629,364
857 : 3,629,365
860 : 3,629,366
867 : 3,629,367
878 : 3,629,368
879 : 3,629,369
880 : 3,629,370
3,629,371
3,629,372
894 : 3,629,373
899 : 3,629,374
934 : 3,629,375

260–941 : 3,629,376
980 : 3,629,377
990 : 3,629,378
261– 23 : 3,628,773
36 : 3,628,774
77 : 3,628,775
113 : 3,628,776
263– 26 : 3,628,777
49 : 3,628,778
264– 29 : 3,629,379
53 : 3,629,380
92 : 3,629,381
98 : 3,629,382
112 : 3,629,383
130 : 3,629,384
154 : 3,629,385
168 : 3,629,386
209 : 3,629,387
219 : 3,629,388
339 : 3,629,389
266– 5 : 3,628,779
267–110 : 3,628,780
154 : 3,628,781
158 : 3,628,782
269– 91 : 3,628,783
270– 61 : 3,628,784
271– 46 : 3,628,785
57 : 3,628,786
68 : 3,628,787
87 : 3,628,788
272– 56.5 : 3,628,789
64 : 3,628,790
83 : 3,628,791
273– 1 : 3,628,792
54 : RE.27,249
100 : 3,628,794
105 : 3,628,793
161 : 3,628,795
274– 4 : 3,628,796
3,628,797
277– 27 : 3,628,799
34 : 3,628,798
140 : 3,628,800
280– 1.202 3,628,801
11.13: 3,628,802
.35: 3,628,803
18 : 3,628,804
33.99: 3,628,805
63 : 3,628,806
79.3 : 3,628,807
104.5 : 3,628,808
124 : 3,628,810
150 : 3,628,809
421 : 3,628,811
285– 24 : 3,628,812
31 : 3,628,813
45 : 3,628,814
334.4 : 3,628,815
287– 23 : 3,628,816
290– 1 : 3,629,596
37 : 3,629,597
38 : 3,629,598
292–247 : 3,628,817
294– 16 : 3,628,818
50 : 3,628,819
82 : 3,628,820
83 : 3,628,821
86.18: 3,628,822
87.2 : 3,628,823
99 : 3,628,824
296– 23 : 3,628,825
98 : 3,628,826
137 : 3,628,827
3,628,828
297–217 : 3,628,829
219 : 3,628,830
258 : RE.27,255
379 : 3,628,831
451 : 3,628,832
299– 36 : 3,628,833
305– 35 : 3,628,834
307– 38 : 3,629,599
66 : 3,629,600
88.3 : 3,629,601
3,629,602

307– 88.3 : 3,629,603
106 : 3,629,604
3,629,605
114 : 3,629,606
117 : 3,629,607
140 : 3,629,608
203 : 3,629,609
218 : 3,629,610
235 : 3,629,611
238 : 3,629,612
252 : 3,629,614
3,629,615
254 : 3,629,616
257 : 3,629,617
264 : 3,629,619
269 : 3,629,618
273 : 3,629,620
287 : 3,629,621
297 : 3,629,622
303 : 3,629,623
353 : 3,629,613
308–184 : 3,628,836
187 : 3,628,835
3,628,837
188 : 3,628,838
217 : 3,628,839
310– 6 : 3,629,624
8.6 : 3,629,625
49 : 3,629,626
54 : 3,629,627
3,629,628
3,629,634
59 : 3,629,629
68 : 3,629,630
3,629,631
74 : 3,629,632
94 : 3,629,633
168 : 3,629,635
184 : 3,629,636
312– 35 : 3,628,840
204 : 3,628,841
259 : 3,628,842
294 : 3,628,843
305 : 3,628,844
319 : 3,628,845
313–109.5 : 3,629,637
3,629,638
229 : 3,629,641
277 : 3,629,642
318 : 3,629,640
315– 18 : 3,629,643
20 : 3,629,645
22 : 3,629,644
31 : 3,629,646
59 : 3,629,647
98 : 3,629,648
159 : 3,629,649
169 : 3,629,653
177 : 3,629,650
227 : 3,629,651
239 : 3,629,652
246 : 3,629,654
313 : 3,629,655
316– 19 : 3,628,846
317– 2 : 3,629,656
33 : 3,629,657
36 : 3,629,658
51 : 3,629,659
69 : 3,629,660
103 : 3,629,661
118 : 3,629,662
123 : 3,629,663
141 : 3,629,664
146 : 3,629,665
234 : 3,629,666
3,629,667
3,629,668
3,629,672
235 : 3,629,669
237 : 3,629,670
238 : 3,629,671
318–128 : 3,629,674
138 : 3,629,675
144 : 3,629,676
341 : 3,629,677

318–558 : 3,629,678
563 : 3,629,679
320– 2 : 3,629,680
21 : 3,629,681
321– 2 : 3,629,682
3,629,683
7 : 3,629,684
13 : 3,629,685
18 : 3,629,686
27 : 3,629,687
45 : 3,629,673
50 : 3,629,688
322– 28 : 3,629,689
323– 1 : 3,629,691
4 : 3,629,692
6 : 3,629,693
9 : 3,629,690
324– .5 : 3,629,694
3,629,697
57 : 3,629,695
3,629,696
58.5 : 3,629,698
60 : 3,629,700
61 : 3,629,699
62 : 3,629,701
73 : 3,629,702
96 : 3,629,703
158 : 3,629,704
173 : 3,629,705
325– 9 : 3,629,706
53 : 3,629,707
461 : 3,629,708
328– 15 : 3,629,709
58 : 3,629,710
72 : 3,629,711
109 : 3,629,712
149 : 3,629,713
151 : 3,629,714
155 : 3,629,715
329– 50 : 3,629,716
330– 23 : 3,629,717
29 : 3,629,718
69 : 3,629,719
86 : 3,629,720
107 : 3,629,721
331– 48 : 3,629,722
94.5 : 3,629,723
96 : 3,629,724
113 : 3,629,725
116 : 3,629,726
117 : 3,629,727
332– 1 : 3,629,728
16 : 3,629,729
333– 1 : 3,629,730
7 : 3,629,731
3,629,732
10 : 3,629,733
11 : 3,629,734
17 : 3,629,735
18 : RE.27,250
3,629,736
24.1 : 3,629,737
30 : 3,629,738
31 : 3,629,739
73 : 3,629,740
78 : 3,629,741
81 : 3,629,742
334– 89 : 3,629,743
335– 69 : 3,629,744
122 : 3,629,745
170 : 3,629,746
174 : 3,629,747
196 : 3,629,748
3,629,749
210 : 3,629,750
3,629,751
212 : 3,629,752
216 : 3,629,753
228 : RE.27,247
253 : 3,629,754
271 : 3,629,755
285 : 3,629,756
336– 55 : 3,629,757
57 : 3,629,758
82 : 3,629,759

336– 90 : 3,629,760
192 : 3,629,761
337– 62 : 3,629,762
66 : 3,629,763
91 : 3,629,764
103 : 3,629,765
239 : 3,629,766
275 : 3,629,767
3,629,768
318 : 3,629,769
333 : 3,629,770
372 : 3,629,771
338– 28 : 3,629,772
43 : 3,629,773
114 : 3,629,774
128 : 3,629,775
140 : 3,629,776
149 : 3,629,777
183 : 3,629,778
3,629,779
198 : 3,629,780
276 : 3,629,781
308 : 3,629,782
339– 4 : 3,629,783
8 : 3,629,784
14 : 3,629,785
16 : 3,629,786
17 : 3,629,787
18 : 3,629,788
33 : 3,629,789
42 : 3,629,790
45 : 3,629,791
60 : 3,629,792
91 : 3,629,793
95 : 3,629,794
98 : 3,629,804
107 : 3,629,803
109 : 3,629,805
116 : 3,629,806
126 : 3,629,807
3,629,808
176 : 3,629,809
217 : 3,629,810
220 : 3,629,811
340– 1 : 3,629,812
3 : 3,629,813
5 : 3,629,795
8 : 3,629,797
15.5 : 3,629,796
3,629,798
3,629,800
3,629,801
3,629,832
46 : 3,629,802
52 : 3,629,799
3,629,814
3,629,815
61 : 3,629,816
62 : 3,629,817
64 : 3,629,818
70 : 3,629,819
72 : 3,629,820
81 : 3,629,821
146.1 : 3,629,823
3,629,824
3,629,825
.3 : 3,629,822
3,629,826
3,629,827
3,629,828
3,629,829
3,629,830
3,629,833
149 : 3,629,834
3,629,835
152 : 3,629,831
166 : 3,629,836
171 : 3,629,837
172 : 3,629,838
.5 : RE.27,251
3,629,839
3,629,840
3,629,841
3,629,842

340–172.5 : 3,629,843
3,629,844
3,629,845
3,629,846
3,629,847
3,629,848
3,629,849
3,629,850
3,629,851
3,629,852
3,629,853
3,629,854
3,629,855
3,629,856
3,629,857
3,629,858
3,629,859
3,629,860
3,629,861
3,629,862
173 : 3,629,863
350– 3.5 : 3,628,847
13 : 3,628,848
96 : 3,628,861
162 : 3,628,849
175 : 3,628,850
289 : 3,628,862
293 : 3,628,851
295 : 3,628,852
319 : 3,628,853
351–175 : 3,628,854
352–130 : 3,628,855
353– 68 : 3,628,856
101 : 3,628,857
3,628,863
355– 3 : 3,628,858
8 : 3,628,859
10 : 3,628,860
18 : 3,628,864
53 : 3,628,865
356– 32 : 3,628,866
136 : 3,628,867
152 : 3,628,868
153 : 3,628,869
170 : 3,628,870
189 : 3,628,871
201 : 3,628,872
208 : 3,628,873
249 : 3,628,874
401–137 : 3,628,875
198 : 3,628,876
402– 17 : 3,628,877
415–108 : 3,628,878
115 : 3,628,880
119 : 3,628,881
3,628,882
204 : 3,628,883
219 : 3,628,884
416– 97 : 3,628,885
183 : 3,628,886
187 : 3,628,887
210 : 3,628,888
230 : 3,628,890
417– 53 : 3,628,891
176 : 3,628,879
221 : 3,628,889
292 : 3,628,892
310 : 3,628,893
353 : 3,628,894
458 : 3,628,895
487 : 3,628,896
519 : 3,628,897
418– 45 : 3,628,898
61 : 3,628,899
88 : 3,628,900
424– 2 : 3,629,390
9 : 3,629,391
22 : 3,629,392
3,629,393
38 : 3,629,394
43 : 3,629,398
44 : 3,629,468
48 : 3,629,395
89 : 3,629,396

424– 89 : 3,629,399
3,629,413
3,629,470
91 : 3,629,397
3,629,400
95 : 3,629,401
117 : 3,629,402
3,629,403
3,629,404
3,629,405
118 : 3,629,406
120 : 3,629,414
121 : 3,629,469
122 : 3,629,407
149 : 3,629,408
195 : 3,629,409
211 : 3,629,410
217 : 3,629,411
232 : 3,629,412
238 : 3,629,415
247 : 3,629,471
248 : 3,629,416
249 : 3,629,417
3,629,467
250 : 3,629,418
3,629,419
251 : 3,629,420
263 : 3,629,421
3,629,422
3,629,423
3,629,424
3,629,425
3,629,472
3,629,473
267 : 3,629,426
270 : 3,629,427
3,629,428
272 : 3,629,430
3,629,474
273 : RE.27,253
3,629,431
3,629,432
3,629,433
3,629,434
3,629,475
274 : 3,629,435
275 : 3,629,436
3,629,437
3,629,438
278 : 3,629,439
3,629,440
279 : 3,629,441
3,629,442
282 : 3,629,443
285 : 3,629,444
3,629,445
289 : 3,629,446
297 : 3,629,476
300 : 3,629,447
304 : 3,629,448
317 : 3,629,449
319 : 3,629,450
3,629,451
3,629,452
320 : 3,629,453
3,629,454
322 : 3,629,455
324 : 3,629,456
3,629,457
3,629,458
3,629,459
325 : 3,629,466
326 : 3,629,460
329 : 3,629,461
3,629,462
330 : 3,629,463
334 : 3,629,464
340 : 3,629,477
349 : 3,629,465
425– 65 : 3,628,223
149 : 3,628,901
431– 2 : 3,628,902
202 : 3,628,903
444– 1 : 3,628,904

CLASSIFICATION OF DESIGNS

D 8– 14 : 222,739
222,740
D 9– 63 : 222,741
67 : 222,742
D13– 1 : 222,743

D14– 6 : 222,744
D15– 11 : 222,745
D23–149 : 222,746
D26– 5 : 222,747
8 : 222,748

D26– 13 : 222,749
14 : 222,750
222,751
D34– 5 : 222,752

D34– 5 : 222,753
222,754
15 : 222,755
D44– 1 : 222,756

D48– 31 : 222,757
32 : 222,758
D55– 1 : 222,759
D83– 1 : 222,760

D83– 8 : 222,761
D86– 10 : 222,762
D92– 26 : 222,763
D96– 12 : 222,764

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,628,385	6 : 3,628,497	6 : 3,629,371	8 : 3,629,839	10 : 3,629,210	17 : 3,628,303
3,628,747	3,628,499	3,629,388	9 : 3,628,189	3,629,301	3,628,305
3,628,868	3,628,529	3,629,422	3,628,278	3,629,318	3,628,330
3,629,805	3,628,559	3,629,424	3,628,375	3,629,323	3,628,362
3 : 3,629,479	3,628,566	3,629,440	3,628,386	3,629,439	3,628,367
4 : 3,628,254	3,628,616	3,629,478	3,628,446	3,629,581	3,628,408
3,628,618	3,628,627	3,629,480	3,628,454	3,629,795	3,628,427
3,628,815	3,628,648	3,629,487	3,628,467	11 : 3,629,161	3,628,431
3,629,022	3,628,653	3,629,491	3,628,471	3,629,184	3,628,463
3,629,163	3,628,657	3,629,515	3,628,476	3,629,340	3,628,464
3,629,566	3,628,664	3,629,522	3,628,589	3,629,580	3,628,477
3,629,578	3,628,680	3,629,530	3,628,679	12 : 3,628,204	3,628,517
3,629,621	3,628,682	3,629,548	3,628,700	3,628,210	3,628,521
3,629,698	3,628,691	3,629,556	3,628,721	3,628,334	3,628,535
3,629,729	3,628,692	3,629,568	3,628,813	3,628,401	3,628,537
3,629,831	3,628,704	3,629,607	3,628,839	3,628,485	3,628,584
5 : 3,628,528	3,628,719	3,629,618	3,628,901	3,628,588	3,628,610
3,628,903	3,628,725	3,629,624	3,628,910	3,628,655	3,628,612
3,629,639	3,628,758	3,629,626	3,628,962	3,628,731	3,628,621
6 : RE.27,251	3,628,760	3,629,632	3,628,970	3,628,791	3,628,643
RE.27,252	3,628,790	3,629,645	3,628,994	3,628,821	3,628,661
3,628,193	3,628,795	3,629,653	3,629,061	3,628,836	3,628,662
3,628,195	3,628,799	3,629,655	3,629,062	3,628,925	3,628,672
3,628,225	3,628,812	3,629,656	3,629,070	3,629,010	3,628,678
3,628,226	3,628,819	3,629,678	3,629,080	3,629,492	3,628,708
3,628,227	3,628,852	3,629,679	3,629,111	3,629,574	3,628,714
3,628,236	3,628,854	3,629,680	3,629,152	3,629,600	3,628,732
3,628,247	3,628,872	3,629,692	3,629,207	3,629,616	3,628,753
3,628,250	3,629,019	3,629,700	3,629,247	3,629,728	3,628,770
3,628,273	3,629,020	3,629,704	3,629,331	3,629,784	3,628,782
3,628,276	3,629,045	3,629,710	3,629,348	13 : 3,628,249	3,628,814
3,628,277	3,629,064	3,629,719	3,629,389	3,628,265	3,628,823
3,628,279	3,629,079	3,629,746	3,629,397	3,628,459	3,628,844
3,628,282	3,629,081	3,629,759	3,629,414	3,628,625	3,628,881
3,628,284	3,629,090	3,629,772	3,629,423	3,628,706	3,628,902
3,628,308	3,629,142	3,629,773	3,629,431	3,628,879	3,628,928
3,628,317	3,629,143	3,629,777	3,629,434	3,629,229	3,628,933
3,628,322	3,629,149	3,629,797	3,629,438	3,629,821	3,628,942
3,628,339	3,629,168	3,629,804	3,629,660	16 : 3,628,730	3,628,967
3,628,356	3,629,169	3,629,845	3,629,662	3,628,827	3,628,968
3,628,373	3,629,182	3,629,850	3,629,706	3,629,134	3,628,973
3,628,382	3,629,225	3,629,852	3,629,786	3,629,135	3,629,042
3,628,383	3,629,242	3,629,854	10 : 3,628,526	3,629,819	3,629,076
3,628,416	3,629,281	8 : 3,628,352	3,628,884	17 : RE.27,254	3,629,100
3,628,458	3,629,287	3,628,764	3,628,913	3,628,212	3,629,116
3,628,469	3,629,296	3,629,051	3,628,956	3,628,237	3,629,119
3,628,488	3,629,324	3,629,353	3,629,047	3,628,245	3,629,139
3,628,489	3,629,338	3,629,382	3,629,048	3,628,269	3,629,190
3,628,492	3,629,342	3,629,517	3,629,156	3,628,275	3,629,232
3,628,493	3,629,362	3,629,617	3,629,187	3,628,299	3,629,276

17 : 3,629,294
3,629,304
3,629,307
3,629,346
3,629,357
3,629,398
3,629,413
3,629,457
3,629,467
3,629,502
3,629,504
3,629,507
3,629,511
3,629,512
3,629,514
3,629,532
3,629,552
3,629,584
3,629,594
3,629,625
3,629,676
3,629,677
3,629,689
3,629,708
3,629,722
3,629,750
3,629,751
3,629,761
3,629,767
3,629,768
3,629,769
3,629,792
3,629,806
3,629,807
3,629,811
3,629,842
3,629,847
3,629,851
18 : 3,628,196
3,628,214
3,628,238
3,628,240
3,628,258
3,628,271
3,628,315
3,628,374
3,628,395
3,628,413
3,628,466
3,628,505
3,628,575
3,628,577
3,628,620
3,628,626
3,628,670
3,628,673
3,628,705
3,628,724
3,628,888
3,629,041
3,629,096
3,629,112
3,629,321
3,629,392
3,629,405
3,629,409
3,629,635
3,629,682
3,629,764
3,629,814
19 : 3,628,536
3,628,558
3,628,685
3,628,876
3,628,972
3,629,529
3,629,802
20 : 3,628,251
3,628,611
3,628,613
3,628,729
3,628,759
3,628,945
3,628,993
3,629,164
3,629,280
3,629,354
3,629,375
3,629,376
3,629,547
21 : 3,628,502
3,628,644
3,628,845
3,629,536
22 : 3,628,192
3,628,261
3,628,346
3,628,899
3,628,918
3,628,986
3,629,052
3,629,108
3,629,113
3,629,128
3,629,151
3,629,401

22 : 3,629,801
23 : 3,628,208
24 : 3,628,244
3,628,268
3,628,333
3,628,347
3,628,371
3,628,522
3,628,579
3,628,638
3,628,733
3,628,757
3,628,833
3,628,851
3,628,915
3,629,007
3,629,021
3,629,178
3,629,410
3,629,520
3,629,590
25 : 3,628,207
3,628,213
3,628,215
3,628,220
3,628,230
3,628,235
3,628,257
3,628,260
3,628,380
3,628,412
3,628,447
3,628,525
3,628,534
3,628,543
3,628,560
3,628,632
3,628,690
3,628,761
3,628,804
3,628,825
3,628,826
3,628,867
3,628,869
3,628,923
3,629,036
3,629,050
3,629,088
3,629,110
3,629,130
3,629,132
3,629,272
3,629,336
3,629,381
3,629,390
3,629,508
3,629,541
3,629,557
3,629,576
3,629,622
3,629,638
3,629,640
3,629,664
3,629,668
3,629,721
3,629,723
3,629,732
3,629,733
3,629,738
3,629,755
3,629,840
3,629,861
26 : 3,628,190
3,628,216
3,628,222
3,628,274
3,628,296
3,628,351
3,628,376
3,628,399
3,628,400
3,628,422
3,628,423
3,628,424
3,628,430
3,628,443
3,628,486
3,628,487
3,628,494
3,628,512
3,628,549
3,628,551
3,628,564
3,628,608
3,628,623
3,628,634
3,628,666
3,628,677
3,628,698
3,628,768
3,628,774
3,628,783
3,628,788
3,628,793
3,628,798
3,628,816

26 : 3,628,817
3,628,820
3,628,831
3,628,841
3,628,853
3,628,862
3,628,866
3,628,937
3,629,025
3,629,046
3,629,071
3,629,086
3,629,091
3,629,092
3,629,093
3,629,106
3,629,115
3,629,127
3,629,129
3,629,153
3,629,175
3,629,228
3,629,266
3,629,297
3,629,298
3,629,299
3,629,315
3,629,344
3,629,367
3,629,402
3,629,406
3,629,419
3,629,483
3,629,606
3,629,620
3,629,669
3,629,762
3,629,763
3,629,775
3,629,780
3,629,783
3,629,816
3,629,863
27 : 3,628,287
3,628,474
3,628,519
3,628,524
3,628,726
3,628,727
3,628,871
3,628,947
3,628,980
3,628,992
3,629,013
3,629,023
3,629,089
3,629,160
3,629,250
3,629,319
3,629,332
3,629,537
3,629,549
3,629,826
3,629,827
3,629,841
28 : 3,629,596
29 : 3,628,199
3,628,200
3,628,297
3,628,369
3,628,379
3,628,468
3,628,498
3,628,500
3,628,675
3,628,689
3,628,737
3,628,772
3,628,800
3,628,807
3,628,946
3,628,982
3,628,997
3,629,114
3,629,120
3,629,124
3,629,206
3,629,209
3,629,312
3,629,313
3,629,329
3,629,380
3,629,447
3,629,448
3,629,595
31 : 3,628,532
3,628,547
32 : 3,628,601
3,629,835
33 : 3,629,696
3,629,715
34 : RE.27,250
3,628,198
3,628,243
3,628,270
3,628,307

34 : 3,628,321
3,628,350
3,628,355
3,628,370
3,628,449
3,628,456
3,628,478
3,628,480
3,628,533
3,628,546
3,628,550
3,628,599
3,628,600
3,628,640
3,628,650
3,628,654
3,628,681
3,628,762
3,628,792
3,628,809
3,628,842
3,628,846
3,628,847
3,628,861
3,628,920
3,628,927
3,628,939
3,628,940
3,628,941
3,628,944
3,628,949
3,628,969
3,628,971
3,628,991
3,629,006
3,629,016
3,629,033
3,629,044
3,629,072
3,629,073
3,629,084
3,629,087
3,629,118
3,629,121
3,629,125
3,629,144
3,629,167
3,629,173
3,629,198
3,629,255
3,629,265
3,629,267
3,629,269
3,629,278
3,629,292
3,629,295
3,629,303
3,629,337
3,629,355
3,629,361
3,629,364
3,629,374
3,629,377
3,629,385
3,629,394
3,629,412
3,629,415
3,629,433
3,629,436
3,629,437
3,629,459
3,629,465
3,629,472
3,629,489
3,629,494
3,629,503
3,629,509
3,629,510
3,629,513
3,629,519
3,629,542
3,629,545
3,629,582
3,629,599
3,629,601
3,629,602
3,629,611
3,629,637
3,629,642
3,629,659
3,629,691
3,629,711
3,629,712
3,629,725
3,629,734
3,629,735
3,629,736
3,629,737
3,629,739
3,629,742
3,629,770
3,629,771
3,629,781
3,629,787
3,629,808
3,629,812

34 : 3,629,833
3,629,843
3,629,846
3,629,862
35 : 3,628,504
36 : RE.27,247
3,628,197
3,628,201
3,628,231
3,628,256
3,628,259
3,628,262
3,628,266
3,628,267
3,628,298
3,628,340
3,628,353
3,628,358
3,628,360
3,628,372
3,628,381
3,628,394
3,628,405
3,628,410
3,628,411
3,628,418
3,628,421
3,628,428
3,628,435
3,628,440
3,628,470
3,628,484
3,628,510
3,628,530
3,628,552
3,628,617
3,628,659
3,628,665
3,628,711
3,628,717
3,628,744
3,628,746
3,628,748
3,628,750
3,628,752
3,628,755
3,628,769
3,628,771
3,628,773
3,628,781
3,628,785
3,628,786
3,628,789
3,628,829
3,628,840
3,628,855
3,628,856
3,628,857
3,628,859
3,628,863
3,628,864
3,628,877
3,628,891
3,628,894
3,628,919
3,628,926
3,628,950
3,628,951
3,628,955
3,628,958
3,628,978
3,628,979
3,628,995
3,628,998
3,628,999
3,629,008
3,629,014
3,629,063
3,629,065
3,629,158
3,629,165
3,629,179
3,629,185
3,629,195
3,629,199
3,629,205
3,629,220
3,629,251
3,629,274
3,629,279
3,629,288
3,629,309
3,629,314
3,629,320
3,629,326
3,629,330
3,629,358
3,629,403
3,629,407
3,629,421
3,629,425
3,629,432
3,629,450
3,629,455
3,629,473
3,629,493

36 : 3,629,496
3,629,499
3,629,518
3,629,521
3,629,535
3,629,555
3,629,560
3,629,565
3,629,572
3,629,573
3,629,598
3,629,614
3,629,644
3,629,651
3,629,667
3,629,674
3,629,693
3,629,702
3,629,726
3,629,740
3,629,779
3,629,782
3,629,791
3,629,823
3,629,824
3,629,825
3,629,829
3,629,844
3,629,848
3,629,853
3,629,855
3,629,860
37 : 3,628,419
3,628,540
3,628,647
3,629,365
3,629,683
3,629,714
3,629,741
38 : 3,628,828
39 : 3,628,191
3,628,229
3,628,246
3,628,292
3,628,318
3,628,329
3,628,331
3,628,393
3,628,396
3,628,403
3,628,414
3,628,441
3,628,450
3,628,453
3,628,491
3,628,561
3,628,565
3,628,572
3,628,585
3,628,586
3,628,587
3,628,590
3,628,630
3,628,639
3,628,641
3,628,645
3,628,658
3,628,669
3,628,671
3,628,693
3,628,695
3,628,712
3,628,742
3,628,784
3,628,811
3,628,835
3,628,837
3,628,843
3,628,880
3,628,885
3,628,890
3,628,930
3,628,931
3,628,977
3,628,985
3,628,996
3,629,004
3,629,009
3,629,026
3,629,068
3,629,109
3,629,123
3,629,140
3,629,141
3,629,147
3,629,208
3,629,223
3,629,345
3,629,356
3,629,395
3,629,408
3,629,451
3,629,481
3,629,495
3,629,525
3,629,558

39 : 3,629,593
3,629,627
3,629,628
3,629,634
3,629,647
3,629,654
3,629,663
3,629,670
3,629,684
3,629,705
3,629,745
3,629,752
3,629,765
3,629,766
3,629,774
3,629,822
3,629,828
40 : 3,628,255
3,628,314
3,628,343
3,628,580
3,628,912
3,628,929
3,628,975
3,629,097
3,629,102
3,629,172
3,629,372
3,629,694
3,629,699
3,629,790
3,629,859
41 : 3,628,472
3,628,542
3,628,602
3,629,731
42 : Re.27,255
3,628,202
3,628,233
42 : 3,628,248
3,628,288
3,628,295
3,628,304
3,628,332
3,628,344
3,628,345
3,628,361
3,628,364
3,628,377
3,628,398
3,628,407
3,628,417
3,628,455
3,628,483
3,628,509
3,628,527
3,628,545
3,628,592
3,628,593
3,628,594
3,628,595
3,628,596
3,628,609
3,628,663
3,628,676
3,628,694
3,628,699
3,628,743
3,628,776
3,628,778
3,628,834
3,628,917
3,628,935
3,628,948
3,628,974
3,629,012
3,629,077
3,629,094
42 : 3,629,131
3,629,136
3,629,159
3,629,171
3,629,235
3,629,262
3,629,285
3,629,333
3,629,360
3,629,391
3,629,427
3,629,462
3,629,475
3,629,476
3,629,488
3,629,553
3,629,554
3,629,562
3,629,591
3,629,608
3,629,609
3,629,612
3,629,613
3,629,716
3,629,744
3,629,747
3,629,758
3,629,760
3,629,778
3,629,803
3,629,837
3,629,857
44 : 3,628,576
3,628,715
3,629,396
45 : 3,628,289
3,628,302
3,628,319
3,628,320
45 : 3,628,452
3,628,460
3,629,029
3,629,339
3,629,559
46 : 3,628,264
47 : 3,628,556
3,628,818
3,629,133
3,629,138
3,629,202
3,629,222
3,629,322
48 : Re.27,249
3,628,232
3,628,280
3,628,336
3,628,348
3,628,349
3,628,357
3,628,397
3,628,462
3,628,523
3,628,531
3,628,539
3,628,568
3,628,569
3,628,604
3,628,605
3,628,606
3,628,615
3,628,628
3,628,718
3,628,728
3,628,756
3,628,765
3,628,822
3,628,832
3,628,898
48 : 3,628,907
3,629,018
3,629,104
3,629,105
3,629,146
3,629,148
3,629,186
3,629,311
3,629,316
3,629,325
3,629,328
3,629,341
3,629,352
3,629,363
3,629,534
3,629,561
3,629,695
3,629,788
3,629,796
3,629,798
3,629,800
3,629,832
49 : 3,628,206
3,628,631
3,628,722
3,629,648
50 : 3,628,359
3,629,032
51 : 3,628,368
3,628,378
3,628,415
3,628,451
3,628,633
3,628,696
3,629,049
3,629,176
3,629,197
3,629,454
51 : 3,629,603
3,629,789
3,629,836
53 : 3,628,253
3,628,316
3,628,578
3,628,734
3,628,794
3,629,000
3,629,005
3,629,030
54 : 3,629,200
3,629,219
3,629,264
3,629,277
3,629,308
3,629,310
55 : 3,628,306
3,628,311
3,628,384
3,628,406
3,628,496
3,628,570
3,628,583
3,628,598
3,628,701
3,628,921
3,629,028
3,629,039
3,629,057
3,629,154
3,629,162
3,629,177
3,629,468
3,629,469
3,629,546
3,629,633
3,629,688

Design Patents

6 : 222,744
222,747
222,751
222,760
6 : 222,764
8 : 222,743
9 : 222,749
17 : 222,761
19 : 222,746
20 : 222,756
24 : 222,762
36 : 222,748
36 : 222,759
42 : 222,750
222,754
222,755
42 : 222,763
44 : 222,739
222,740
48 : 222,752
222,753
53 : 222,757

U.S. GOVERNMENT PRINTING OFFICE: 0—1971

U. S. DEPARTMENT OF COMMERCE
Maurice H. Stans, *Secretary*

PATENT OFFICE
Robert Gottschalk, *Acting Commissioner*